THE MEDICAL JOURNAL OF AUSTRALIA

VOL. I.—19TH YEAR. SYDNEY, SATURDAY, FEBRUARY 13, 1932. No. 7.

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Syme Memorial Lecture.[1]

GEORGE ADLINGTON SYME: THE MAN AND THE SURGEON.

By A. L. KENNY, M.B. *et* Ch.B. (Melbourne), F.R.A.C.S.

Foreword.

THE Council of the Victorian Branch of the British Medical Association, which controls the George Adlington Syme Memorial Fund, has honoured me with the invitation to deliver the second triennial lecture. The first lecture was delivered in the year 1928 by the late Frederick Dougan Bird in his own peculiarly graceful, cultured and inimitable style in the presence of Sir George Syme. The second lecture is thus really the first "memorial" lecture, since Sir George Syme died in 1929. The Council thought that by reason of a long intimate personal association and a close friendship with Sir George I should be entrusted with this lecture. Certainly I could say of Sir George Syme as did Fluellen of the Duke of Exeter: "A man that I loved and honoured with my soul, and my heart and my duty." Not being a general surgeon, I have not presumed to make the lecture a surgical one; that will be done in the years to come by a long succession of competent surgeons. In the forty-six years of my professional life, I have been frequently impressed by the plaint of medical men writing memorial lectures, that they have been unable to ascertain facts concerning the career of the person to be commemorated. I have made a most careful search and investigation—through the

[1] Delivered at a meeting of the Victorian Branch of the British Medical Association on November 26, 1931.

family and relatives of the late Sir George Syme, through the schools, university, associations and clubs with which he was connected, and through friends, officials, journals, reports and records wherever I surmised that detailed accurate information could be obtained. The Council of the Branch has previously issued to its members a memorial volume embracing all of the panegyrics written and spoken concerning Sir George; I have taken for granted that all those who are interested will have read and retained this and I have endeavoured to avoid repeating what is therein contained.

Early Days.

Time goes, you say? Ah! no.
Alas! Time stays, we go.

In the early part of last century there was born in Forfarshire, Scotland, George Syme, who married Jean Mitchell. He received a university education, was an excellent Latin scholar, and became parish school-master in North Berwick, a seaport in Haddingtonshire, one of the Lothians. "Passing rich with forty pounds a year" he had a family of five sons and two daughters of whom a boy and a girl died in infancy. The life in the home of this George Syme (our subject's grandfather), as described by his son David, is of interest to us. Summer and winter the boys had to rise at 7 a.m. and work at their books until breakfast time and then proceed immediately to school where they were kept until 4 p.m., with half an hour for dinner in winter, and an hour in summer, but no time for play. After a short tea interval they had to work at their lessons again till bed time (9 p.m.). Duty was the law of the household and there was no room for anything else. There was no intercourse between father and sons; the father never spoke to the sons except to give an order, they never spoke to the father except to ask a question. If the sons did anything well they had to understand that it was only their duty to do so. The father was naturally kind, a devoted husband, and he freely gave help to all. He denied himself every luxury and many of the comforts of life that he might have the more to spend on his family. The sons had an immense admiration for him, for his sterling, if stern, integrity and manly character. He was by no means morose and in congenial company could keep the whole table in a roar. Three of the sons were sent to a university and each of them creditably passed the examinations necessary to qualify him for the medical or clerical profession.

The eldest son, James, graduated in surgery at the University of Glasgow and practised in Bathgate where, when still young, he died from typhus fever contracted from a patient. The third son, Ebenezer, took his Master of Arts degree at the University of St. Andrews and entered the ministry in charge of a Baptist congregation, but soon abandoned it for journalistic work. He was for two years assistant editor of the *Westminster Review*, then the organ of the philosophic radicals and in the full zenith of its power. On his resignation from this position he joined his brother David in Australia and became the first editor of *The Age* on October 17, 1854, on its foundation by John and Henry Cooke, local merchants and stock owners in Melbourne. Shortly after the Eureka Stockade riot, he combined forces with Thomas Bright and David Blair to purchase *The Age* newspaper.

The youngest son, David, was educated at home by his father, who died when David was sixteen years of age. He attended for two years classes in theology and exegesis conducted by Mr. Morrison at Kilmarnock. As the result of his severe studies at home and at Kilmarnock his health broke down and he went to the Continent for a year. He thence drifted to the Californian diggings and finally to Melbourne in 1852, where, after some mining and contracting experiences, he joined his brother Ebenezer in the purchase of *The Age* for £2,000, bringing out their first issue on June 12, 1856. As the returns did not provide a sufficient income for both, he retired from the management about the middle of 1857 and reengaged in contracting. Ebenezer Syme died in 1860 and David Syme then assumed full control of *The Age*.

The second son, George Alexander, born at Montrose, Scotland, on October 10, 1821, graduated Master of Arts at the University of Aberdeen and entered the ministry of the Free Church at Dumfries. Because of his objection to the Calvinism of the Confession of Faith and his inability to conform with its creed he left the Free Church and attended theological classes at Kilmarnock under the auspices of the Evangelical Union. In 1848 he proceeded to Nottingham, in England, and became pastor of a well-known Baptist Church there. In this position for nearly fifteen years he was prominently active in the religious and municipal interests of Nottingham and also laboured energetically for social and political progress in England and abroad. He was a member of the Society of the Friends of Italy and carried on a correspondence with Kossuth in the interests of struggling nationalities. When the refugees of the upheaval of 1848 fled for safety to England he formed a society at Nottingham to find them employment during their exile. He frequently engaged in animated debates with secularist leaders such as G. J. Holyoake. In 1862 through failing health he resigned from the ministry and joined his younger brothers Ebenezer and David in Melbourne. He was for some years connected with *The Age* and then became editor of *The Leader*, which he conducted for more than twenty years with conspicuous success in a literary and commercial sense. Owing to advancing years and increasing physical disability he retired in 1885. He was an omnivorous reader to the last and, though of rather too retiring and reserved a nature, in a small circle of his intimate friends he was as interesting and instructive a companion as Carlyle himself, with a good deal of the rugged Carlylean manner in his speech. The Honourable Alfred Deakin described him as "the loyal and generous George Syme, who, except in earnest gravity and other characteristics common to brother Scots, bore little resemblance to his brother David. A beautiful conscientiousness, patient capacity and gentleness, such as he possessed, added little to the picturesqueness, but a great deal to the consistency and peace

of the (*Age* and *Leader*) office in his day." George Alexander Syme married Miss Susannah Goodyear, of a Quaker family, who was born on July 6, 1819, and died on April 27, 1889; he died on December 31, 1894. On July 13, 1859, their son, George Adlington Syme, was born in Nottingham and was brought by his parents to Melbourne in 1862.

Note the antecedents and environment of the young George Adlington Syme—the Presbyterian religious atmosphere softened from the rigid Calvinism with its promise of future punishment from which escape was difficult; the self-contained silence and reserve of his relatives, the all pervading and ever-present sense of duty, unstinting devotion to and concentrated thought upon the task in hand, a passion for reading, constant thought and care for the welfare of others; the calmness, the equability of mind and temper, the sobriety of dress and demeanour, the quiet contemplativeness coming from the Quaker descent of his mother—all of these made up the George Adlington Syme we knew, whose life in the profession we wish to commemorate. There is no record available concerning George Adlington earlier than that of his attendance when about ten and a half years of age at the Church of England Common School, named St. Andrews, at the corner of Church and St. Andrews Streets, Middle Brighton. The headmaster was Arthur Robinson, M.A., with Mr. Edmondson and Mr. J. R. Corr as assistants. George Adlington remained at this school some eighteen months. A school-fellow tells that he did not usually take part in the games, but had a wonderful memory; after once reading a piece of poetry he could repeat it correctly so that the headmaster and others thought him "a perfect wonder", though he seemed to think nothing of it. In 1873 he entered Wesley College, where he was a painstaking, diligent student, who said little but looked on. Being slight in physical build and having defective sight (myopia) he was not prominent in any of the college sports although he tried hard in football as a follower. He was always straight in every sense, a staunch friend with high moral principles, but always reserved excepting to a few. All of his virtues at school were an indication of his future career. He manifested a desire to acquire knowledge by constant application to his work whatever it might be and he was always desirous to be of help to others. His principal chums at Wesley College were H. J. Scott (afterwards a captain of an Australian cricketing eleven) and W. R. Ray. He was one of the earliest members of the Old Wesley Collegians' Association of which he became President in March, 1922.

Dr. Felix Meyer says:

Syme at Wesley College, 1873, 1874, 1875, 1876, was a quiet, self-contained boy, a steady worker, solid rather than brilliant, but very thorough and keen on knowing his work. He had then a tenacity of purpose and was very reliable. Without being aloof, he did not "mix" with his fellow scholars, except in sport. But he had some close "mates" who shared his love of country walks, campings *et cetera*. He loved nature and the out of the way places. He knew the Hobson's Bay coastline very well. You would not have credited him with a strong sense of humour, but he did enjoy a joke. Underneath his calm and well-balanced atmosphere, there was a warm and affectionate nature and he was a loyal and helpful friend. I don't think he ever swerved from absolute truth. In sport, he was a good footballer—"a nippy forward" as Mr. Justice Cussen called him in university days. George Syme the man was the harmonious development of George Syme the schoolboy.

University.

He matriculated (Number 1011) at the University of Melbourne in the February term of 1877, winning the Exhibition in History, Geography, English and French, and began the course for degrees in medicine and surgery. The Class List for the first year of the medical course, 1877-78, shows:

1st Class—J. W. Barrett
2nd Class—G. A. Syme
G. H. S. Z. Woinarski
E. W. Anderson
3rd Class—C. Bage
M. J. Ryan
T. B. Ryan
J. N. Mullen
T. Loughrey, W. R. Fox } *ex æquo*

University contemporaries in his first year were:

Second Year Law Course, 1877-8:
1st Class—T. a'B. Weigall, former Justice of the Supreme Court of Victoria.
I. A. Isaacs, His Excellency the Governor-General.

Second Year Engineering Course, 1877-8:
1st Class—L. F. B. Cussen, now Sir Leo Cussen, Acting Chief Justice of the Supreme Court of Victoria.

He was not classed in the second year, 1878-79.

For the third year, 1879-80, the Class List was as under:

1st Class—None
2nd Class—G. A. Syme, J. W. Barrett } *ex æquo*

For the fourth year medical course, 1880-81:

1st Class—G. A. Syme
J. W. Barrett
2nd Class—None
3rd Class—E. W. Anderson

and for the fifth year medical course, 1881-82:

1st Class—G. A. Syme
2nd Class—J. W. Barrett
C. Bage
3rd Class—J. N. Mullen

The scholarship for surgery, medicine and forensic medicine was awarded to G. A. Syme. His old college had a half-holiday in honour of the occasion. Previous scholars were:

1867 W. C. Rees	1876 H. B. Allen
1868 Not awarded	1877 T. A. Garlick
1869 O. V. Lawrence	1878 C. H. Scott
1870-71-72-73 No candidate	1879 J. R. M. Thomson
1874 G. T. Teague	1880 W. Armstrong
1875 B. Poulton	1881 R. Stewart

On December 3, 1881, the degree of Bachelor of Medicine was conferred upon the following:

E. W. Anderson	W. McGuire
C. Bage	J. N. Mullen
J. W. Barrett	T. B. Ryan
E. S. Jackson	G. A. Syme
T. Loughrey	

On April 15, 1882, the degree of Bachelor of Surgery was conferred on:

T. Loughrey
T. B. Ryan
G. A. Syme

During his student days Syme was an active member of the Melbourne Medical Students' Society and read papers at its meetings. On May 12, 1881, he read a paper on the construction and the use of the laryngoscope; on July 21, 1881, notes of a case of chronic myelitis of the anterior columns of the cord; on August 18, 1881, he read notes of a case of thoracic aneurysm and showed specimens.

Professional Career.

George Adlington Syme was registered as a legally qualified medical practitioner in December, 1881, was appointed as a resident medical officer to the Melbourne Hospital on May 1, 1882, and was re-appointed for a further six months on April 15, 1883. During his occupation of the position of resident medical officer in the Melbourne Hospital, he was one of five, the others being C. W. Bage, J. W. Barrett, T. Loughrey, and J. Nelson Mullen. On account of some condition of health he was allowed by the committee of the hospital to go to his home at Middle Brighton at night to sleep. All the five residents were on duty for the forenoon of each week-day, one in the casualty room, two in the medical wards, and two in the surgical wards; very often one resident only was on duty in the afternoon, and two were liable to be called at night, one for surgical duty in the casualty room or surgical wards, the other for the medical wards. George Syme was almost always to be found in the wards on week afternoons. He was very thorough and somewhat slow and deliberate about his work, and such heavy work as spica plaster cases, fractured thigh plaster cases, and back splints with sidepieces were often attended to by him. With other resident medical officers he used to go to Sir Thomas Fitzgerald's home for some hard games of tennis before breakfast. Towards the end of 1883 he went to England, and in 1884 entered King's College Hospital, London, where he worked under Lister and studied for the Fellowship of the Royal College of Surgeons of England; he obtained the diploma of membership of the Royal College of Surgeons in 1884 and the Fellowship in 1885. He then acted as clinical assistant at the Royal London Ophthalmic Hospital at Moorfields, the Central London Throat and Ear Hospital, and the Soho Hospital. On his return to Melbourne in 1887 he was appointed Demonstrator and Examiner in Anatomy in the University of Melbourne. He was appointed Pathologist to the Women's Hospital, Carlton. In 1887 he became Honorary Surgeon to Out-Patients in the Melbourne Hospital and continued in this position until 1903.

Royal Sanitary Commission.

During the years 1888 and 1889 Syme was Secretary to the Royal Commission on the Sanitary Condition of Melbourne under the presidency of Professor H. B. Allen. The labours of this Commission led the way for the engagement of Mr. Mansergh to design the sewerage system for the metropolis of Melbourne, the effects of which have banished from our city the erstwhile scourge of typhoid fever with its heavy mortality of adolescents. This Royal Commission was appointed on March 20, 1888, by the Governor of Victoria (Sir Henry Brougham Loch) during the premiership of the Honourable Duncan Gillies; the Commission stated: "and for your assistance in the execution of this Commission we have made choice of our trusty and well-beloved George Adlington Syme, Esquire, M.B., B.S., F.R.C.S. (England), to be Secretary to this our Commission". The Commission inquired into and reported upon the general sanitary condition of Melbourne, the meat supply, abattoirs, noxious trades and the water supply. Three progress reports were presented and the final report presented to the Governor of Victoria (Lord Hopetoun) on January 6, 1890, stated: "Our last duty is the pleasant one of acknowledging the great assistance which has been given us in all our investigations by our Secretary Mr. G. A. Syme, F.R.C.S."

In 1889 Syme was selected to succeed the late Dr. West Ford as Surgeon to the Victorian Police Force. He loved the work associated with this appointment and carried it on after his retirement from practice until just before his death. Not the least exciting of his varied experiences was that of being the first surgeon in the State to use an aeroplane on a professional call to attend a police officer who had been shot at Swan Hill. In 1889, he became also Honorary Consulting Surgeon to the Queen Victoria Hospital for Women. The Sisters of Charity of Saint Vincent's Hospital, Melbourne, appointed him Honorary Surgeon on the first staff created for that hospital in 1893; he retained his appointment until his selection by the Committee of the Melbourne Hospital as Honorary Surgeon for In-Patients to their institution in 1903 from which position he retired in 1919. He was Honorary Consulting Surgeon to Saint Vincent's Hospital. The Melbourne Dental Hospital elected him Honorary Consulting Surgeon in 1901.

He lectured in anatomy at the Medical School of the University of Melbourne from 1900 to 1904 and was a member of the Faculty of Medicine. From February 17, 1912, until his decease he was a member of the Council of the University of Melbourne.

The Medical Defence Association of Victoria, Limited, was founded in 1894 and on December 19 of that year George Syme, with four other medical men, signed the Articles of Association. He was at once elected President and retained that office until his death, a period of thirty-five years.

In December, 1928, he was elected Chairman of the Committee of Management of the Melbourne Hospital and was until his decease the head of that hospital, which he had entered as a student in 1879, as resident medical officer in 1882, as Honorary Surgeon to Out-Patients in 1887, and as Honorary Surgeon to In-Patients in 1903.

The Melbourne Medical Association also found in him an enthusiastic worker and made him their President in 1899 and in 1902.

British Medical Association.

Throughout his whole professional career George Adlington Syme was most intimately associated with all of the activities of the Medical Society of Victoria and with the Victorian Branch of the British Medical Association when they were separate bodies, and

more especially after their amalgamation. Some of his finest work in the general interests of the medical profession was done in the Council of the Victorian Branch of the Association, which made him its representative on the Federal Committee of the Australian Branches of the British Medical Association from the time of its formation to his decease. He became Chairman of the Federal Committee after the resignation of Dr. W. Hayward, of Adelaide, its first President. Nowhere was his clear, level, logical, judicial mind seen at work to greater effect than in the Branch Council and the Federal Committee. His colleagues learned to give the greatest weight to and to rely upon his wise and prudent contributions to their discussions. Above all things it was plain that he approached the multitudinous and varied problems before them in a spirit of absolute selflessness, with a scrupulous regard for the preservation of the rights of medical practitioners and a paramount determination to place before all the well-being of the sick or injured patient.

For thirteen years he was engaged in editorial work, at first on the *Australian Medical Journal* with the late Dr. William Moore from February 15, 1888. In 1894 Dr. Moore retired, and Sir Richard Stawell with Dr. A. Jeffreys Wood were joint editors with Syme; this partnership continued until the *Australian Medical Journal* in 1896 became the *Intercolonial Medical Journal of Australia* when the late Dr. W. Gardner and Dr. David Grant were added to the three just named as editors representing Victoria. In 1901 Dr. J. F. Wilkinson replaced Sir Richard Stawell and Syme retired at the end of the same year.

His election to membership of the Medical Society of Victoria took place on March 7, 1883, and to the Victorian Branch of the British Medical Association on March 30, 1887. He was President of the Branch in 1900 (a very stormy year for medical men). In his retiring address, the President for 1899, Mr. A. L. Kenny, said:

> In my successor Mr. G. A. Syme, M.S., F.R.C.S., the Branch has for its President a man of wide and deep reading, of large practical experience, of sound and well-tried judgement and of the broadest liberality of mind, who has graced the chair of many medical and lay societies, and who will in every manner increase the prestige of the Association in Victoria. I earnestly congratulate the Branch on his accession.

At the amalgamation of the two societies in January, 1907, George Syme was one of the two Vice-Presidents of the amalgamated society and became President in 1908 and again in 1920. He was never in the Presidential chair of the Medical Society of Victoria.

For very many years, despite the heavy calls made upon his time and energy by his large operating practice and by his varied obligations and appointments, he was unfailing in constant attendance to the requirements of his position on the Branch Council and the Federal Committee. It is not possible to express adequately the debt of gratitude and appreciation most justly due and most freely rendered to him by the followers of the medical profession for his unceasing and untiring use of his finest mental gifts in their behalf. From 1916 he was a trustee of the Medical Society of Victoria.

Medical Congresses.

Parallel with his work in the Medical Societies was his occupation with the Intercolonial Medical Congresses from 1888 to 1923 and thence onward with the Australasian Medical Congresses of the British Medical Association. In these he held at various times every office; he contributed to the general discussions and read many papers in the sections.

Intercolonial Medical Congresses of Australasia.

First Session, Adelaide, 1887—He attended.

Second Session, Melbourne, January, 1889—He was, with J. W. Barrett, Associate Secretary to the Honorary General Secretary, Professor H. B. Allen. In the Section for Diseases of the Eye, Ear, Nose and Throat he read a paper entitled: "Ocular Manifestation of late Hereditary Syphilis".

Third Session, Sydney, 1892—With Dr. Thomas Cherry he presented an original paper entitled: "The Nature and Treatment of Ganglia, Being a Development of Preliminary Observations on Ganglia", read before the Victorian Branch of the British Medical Association in 1890. There were ten pages of drawings of microscopical specimens.

Fourth Session, Dunedin, January, 1896—He was a Vice-President of Congress and Local State Secretary for Victoria. He spoke in favour of the establishment of one medical journal for Australasia and dealt with the surgical aspect of tuberculosis in a general discussion on tuberculosis in man and animals.

Fifth Session, Brisbane, September, 1899—He was again a Vice-President of Congress, being President of the Melbourne Medical Association and of the Medical Defence Association of Victoria. He was also again Local State Secretary for Victoria. At a special general meeting of the Congress he opened a discussion on "The Relations of the Medical Profession with Friendly Societies".

Sixth Session, Hobart, February, 1902—He was once more a Vice-President as President of the Medical Defence Association of Victoria, and was also Local State Secretary for Victoria. He was a Vice-President in the Section of Surgery before which he read a paper on prostatectomy, a subject on which he had presented to the Medical Society of Victoria in July, 1897, a preliminary paper entitled: "Enlargement of the Prostate Gland and Its Surgical Treatment".

Seventh Session, Adelaide, September, 1905—He was President of the Section of State Medicine and Medical Ethics before which he read a Presidential Address in which he gave quotations from Sir James Paget expressing his own ideals for the medical profession: "Our profession unites those three qualities which have the greatest charm for pure and active minds—novelty, utility, charity . . . ." "We can compete in the world not for wealth and position but in the nobler ambition of being counted among the learned and the good, who strive to make the future better and happier than the past."

Eighth Session, Melbourne, October, 1908—He was Honorary Treasurer to Congress and, with G. C.

Rennie, Secretary for the Section of Surgery. He gave a series of demonstrations at the Melbourne Hospital: (*a*) A series of cases of sarcoma and carcinoma, showing results after many years, including sarcoma of brain and of tonsil, and carcinoma of stomach, tongue and breast. (*b*) Cases of successful operation for intraspinal hydatid disease; a case of hydatid of the ilium, and of hydatid of vertebra and rib. (*c*) A case of acute pancreatitis successfully operated upon four years previously. (*d*) A case of trigeminal neuralgia in which the Gasserian ganglion had been removed four years previously.

Ninth Session, Sydney, 1911—He was President of the Section of Surgery.

Tenth Session, Auckland, 1914—He delivered the report of the Committee on Syphilis to the full Congress.

Eleventh Session, Brisbane, 1920—He attended.

Australasian Medical Congresses (British Medical Association).

First Session, Melbourne, November, 1923—He was President of Congress.

Second Session, Dunedin, February, 1927—He was Vice-President of Congress. He discussed, in the Section of Surgery, jejunostomy and prostatectomy, also the surgical aspects of hydatid disease.

As representative of the Government of Victoria Syme attended the Sixteenth International Medical Congress at Budapest, August 29 to September 4, 1909.

Press Conference.

Whilst George Adlington Syme was in England in 1909 Mr. Geoffrey Syme, proprietor of *The Age* newspaper, requested him to represent that paper at the First Imperial Press Conference. He attended all meetings of the Conference and, with his wife, accompanied his fellow delegates on the various trips through the provinces arranged by the newspaper proprietors of Great Britain. At the historic banquet in the White City, where Lord Rosebery delivered his celebrated Welcome Home address, his table companion was Mr. Geoffrey Dawson, now editor of the *London Times*. The Conference resulted in the formation of the Empire Press Union as a permanent body. At the London meetings of the Conference matters vitally affecting the Empire occupied a greater prominence than purely newspaper questions. When the delegates were guests at private luncheons and dinners, very intimate unreported discussions took place as to the events likely to happen in Europe and the possibilities of avoiding the coming war which was presaged by Lord Rosebery's great speech: "Are the Nations Rattling into Barbarism?". George Syme was a prominent figure in visits to the House of Commons and other functions and was sought for in medical and academic circles (as on his visit to Oxford University) and throughout the Scottish trip where both at Glasgow and Edinburgh he was singled out for special attention. At Edinburgh he was made the guest of the Edinburgh University, where his reputation and personality, his wide attainments, and habits of thought were well known, quite apart from his professional standing. At all the dinners and other functions of which Ministers of the Crown and leading public men were the hosts, matters concerning the Empire, particularly in relation to the navy and the likelihood of war, were very fully discussed, and the impression made by Syme as a man of knowledge and weighty opinion certainly contributed to giving the Australian delegation a standing among leading men of all parties. A photograph of the diminishing company of those who founded the Empire Press Conference in 1909 was taken at the recent Empire Press Conference in Melbourne; George Adlington Syme was amongst the twelve or thirteen survivors. He figures in a curious photograph taken on the keel of the first Australian warship in Vicker's yard; it was a group of delegates to the 1909 Press Conference, and amongst his colleagues were the late J. Winthrop Hackett, James Fairfax, and the Hon. J. Kirwen. Members of the 1909 Conference were not only men prominent in the newspaper world, but included many outstanding literary men of England. George Syme during this conference had talks with Mr. Balfour, Mr. Lloyd George, Mr. Asquith, Mr. Milner, Earl Roberts and other notable people. (Mr. Geoffrey Syme and Mr. Theodore Fink.)

Beefsteak Club.

A friend of Syme, on hearing of the Beefsteak Club for the first time, would naturally find difficulty in believing that he could be a member of a body the very name of which suggests repletion and table indulgence which were, of course, quite repugnant to his taste. Yet he was not only one of the oldest members, but the most constant in his attendance. The fraternity was founded in the middle eighties by several men who sought closer union on congenial subjects such as literature, art, music and philosophy, and they decided upon a monthly dinner of simple fare as the best means of serving this desire. They took the name from the ancient and still existing Beefsteak Club of London. By any other name it would have been just what its founders wished it to be and just what it is now. The member who presides reads a paper, the contents of which are not previously divulged, on some question or problem. A discussion follows and everyone may say what he thinks. It was at these gatherings that Syme was always at his best in the spirit of comradeship and understanding. Of course, he was seriously minded—that was his chief characteristic—when seriousmindedness was appropriate; but there were lighter moments when he revealed a delicate sense of humour, as those who knew him best expected that he would. Once, when the boy was being discussed, the talk turned upon the attraction that youngsters feel for "Deadwood Dick" yarns and so on. Syme joined in the general opinion that it would perhaps be better if books of higher quality were read, but he felt for the boy all the same. "I have tried", he said, "to induce my son to try something better. One evening I took up one of his books of the type which we are all condemning just to see what it was like, but I could not put the jolly thing down until I had finished it." His papers were mainly upon literary and art themes and were marked by a profound knowledge and wise discrimination. He always paid the Club the honour of mastering his subject.

In the discussions on other occasions, his intervention was always awaited with expectancy, and was never disappointing. His passing away filled the Club with sadness for the loss of a great friend and for the loss also of a great mind. (Dr. E. S. Cunningham.)

Wallaby Club.

Professor Ernest Scott writes:

Mr. Syme was an early member of the Wallaby Club, and a regular attendant at its country walks. I think he must have been a member for about 30 years. He liked walking, but perhaps the pleasure he derived from these rambles in the hills was due more to the conversations with men of many ways of life and various points of view, than to the exercise. For although, as all who knew Mr. Syme are aware, he was a silent man, nevertheless he enjoyed conversation. He was an acute listener, and occasionally would throw in a very emphatic opinion, in his own staccato style, with a suggestion of finality, as far as his judgement went on the topic under consideration. He liked especially literary discussion. His own interest in modern dramatic literature was very deep, and he was also widely read in poetry and criticism. He liked the clash of argument; one could tell from his keen, peculiarly watchful expression that he followed the points with close attention; but he would not say anything himself until he had carefully formulated the thought in his own mind, when he would rap out something exactly apt and conclusive. He was a very strong walker. Those who knew him on these jaunts will always remember his very thick-soled boots, and his easy, vigorous stride, which, for a man of his short stature, seemed to cover an unusual amount of ground in its swing.

According to Mr. Theodore Fink, George Syme was a very old and much loved member of the interesting circle known as the Wallaby Club which was a group of seventy-five men who were supposed to be kindred spirits, including Ministers of the Crown, public men, doctors and members of other learned professions, literary and scientific people, who met during the walking season of the year fortnightly and wandered through pleasant country on Saturday afternoons or whole Sundays, communing with nature and one another. Syme was one of the oldest members, having belonged to the Club since the early nineties. He was President and, as in all other circles, was well loved and appreciated. According to one of the members, the late Sir G. H. Knibbs, out of the seventy-members a large majority had written poetry. It was not known that George Syme was one of this number.

Repertory Theatre.

Sir Robert Garran, whom Syme succeeded in the Presidency of the movement after Sir Robert's translation to Canberra, writes:

From its inception Sir George Syme was keenly interested in the Repertory Theatre in Melbourne and was a regular attendant at its performances. He was an admirable Chairman, always attentive to the views of others and always, after hearing discussions, quite definite as to his own views. When little rifts occurred due to "artistic temperament", from which Repertory artists are no more immune than their professional brethren, Syme was tactful and infinitely patient; but when the Committee had reached its decision on the matter, he would have no nonsense, and became the stern disciplinarian. I had previously only known him socially and remember being struck, as a member of the Committee, by the firmness of the steel hand beneath the velvet glove. I think the persons disciplined were surprised too. He took a keen interest in the production from an artistic standpoint, and would when time permitted, look in at rehearsals, and give words of encouragement to players and producers.

War Service.

George Syme left in the Australian Imperial Forces Hospital Ship *Kyarra* in December, 1914, for the Great War, having the rank of Lieutenant-Colonel. He was Chief of Surgical Staff to the First Australian General Hospital at Cairo. Colonel Ramsay Smith, who was the Principal Medical Officer of the Australian Imperial Expeditionary Force in Cairo, found difficulty in providing a medical officer for the Venereal Diseases Camp and for the Measles Camp, one mile away from the general hospital. Measles was serious and deaths were occurring. He was advised by Sir James Barrett to call in George Syme and Sir Henry Maudsley to discuss the matter. It was typical of Syme's breadth of view and sense of duty that he at once offered to take charge of these two camps. Colonel Smith thanked him but said he was too valuable as a surgeon to be sent to these camps. Later, at the request of the Director of Medical Services, he was appointed Surgical Consultant to the British Hospital Ship *Gascon* running between Gallipoli and Alexandria and was present in that ship at the famous landing of the Anzacs and had to attend to and operate upon, under fire, some of the severely wounded first evacuated from the shore. During one of these operations he injured his right hand against a spicule of bone and inoculated himself with a form of sepsis which nearly cost him his life, caused him prolonged and severe suffering and from which it was for a time regarded as certain that he would lose an arm. As it was it took a long time and much treatment before he regained the full usefulness of hand and arm. He was for some time a patient in Number 17 British General Hospital in Alexandria. He was offered removal to Number 1 Australian General Hospital at Cairo, but, as he was then improving, he decided to remain at Alexandria until he was invalided to London about June of 1915. There his condition continued to improve and he was given massage, together with electrical and various other forms of treatment. He was employed by Dr. Norris, then in charge in London, on board duty with Sir Henry Maudsley, and with Dr. Zwar. He returned to Australia in December, 1916, and was then attached to the Base Hospital, St. Kilda Road, and to the Caulfield Military Hospital as surgeon.

Family.

George Syme married Miss Mabel Berry, daughter of the late W. Berry, Esq., of New Zealand, on May 10, 1899. There are three daughters and one son, G. Robin Syme, M.B., B.S. (Melbourne), F.R.C.S. (England), who married Miss Meredith Sutton, daughter of Dr. Charles Sutton of Melbourne; they have a young son, Graham Adlington, born in London on October 19, 1931.

Retirement.

When the Council of the Victorian Branch of the British Medical Association became aware of George Syme's intended retirement it passed the following resolution on May 21, 1924:

> That this Council, considering the fact of Mr. Syme's retirement from all practice on June 30th, 1924, should take into consideration what arrangements it and the whole profession should make to mark their esteem and affection for Mr. George Adlington Syme.

The Executive Officers of the Branch were constituted a Committee to take the necessary steps to give effect to the resolution.

Knighthood.

On June 2, 1924, the newspapers announced that His Majesty King George V had been pleased to confer the honour of Knighthood of the British Empire upon George Adlington Syme.

On several occasions representative members of the medical profession had approached the State Government with a request from the profession that George Adlington Syme should be knighted and it was hoped that the honour would have been conferred on him before the opening of the First Session of the Australasian Medical Congress (British Medical Association) in 1923, of which he was President.

On June 18, 1924, at the Council Meeting of the Victorian Branch of the British Medical Association, the President, Dr. Dunbar Hooper, moved:

> That this Council records its most hearty congratulations to Sir George Syme on the bestowal on him by His Majesty the King of the distinction of Knight of the British Empire.

In seconding the motion Dr. Stanley Argyle remarked that the honour was somewhat belated. The motion was carried unanimously and in acknowledgement thereof Sir George Syme said:

> I can assure you that I do not think the honour was belated. Had it been offered to me years ago I would not have accepted it. But now, without much hesitation, I did so because I realized it was an honour to the profession rather than to myself. As my colleagues in the profession had made me their representative in appointing me President of Congress in 1923 and President of the Federal Committee I felt that I could not act for myself—that I had to consider the profession regarding it as an honour to the profession.

At the Council Meeting of the Victorian Branch of the British Medical Association held on September 26, 1924, a letter was read from practitioners in Harley Street, London, conveying their best wishes to Sir George Syme on the occasion of his receiving the honour of knighthood. The Council ordered the letter to be sent to Sir George Syme, retaining a copy only.

Memorial.

It was announced by circular (June 12, 1924) to the medical profession that The Syme Foundation and Portrait Fund had been created to mark by some special and permanent expression of appreciation the long and valued services which George Syme had given to the medical profession of Victoria and Australia. It was intimated that the Council had decided:

(I) To establish a Foundation which shall be in the name of Sir George Adlington Syme, and which shall be applied to the advancement of surgical science. This Foundation Fund shall be controlled by the Council of the Branch.

(II) To commission Sir John Longstaff to paint a portrait of Sir George Syme to be hung in the Medical Society Hall.

(III) To provide a replica of the portrait for presentation to Lady Syme.

The announcement met with a most hearty response from the profession and the portrait was presented to Sir George Syme in the large hall of the Victorian Artists' Society's Building in Albert Street, East Melbourne, on November 26, 1924. The President of the Victorian Branch (Dr. Dunbar Hooper) said that the members of the Branch had decided that they and the succeeding generations should have the inspiration of Sir George Syme's quiet dignity, unassuming demeanour, sterling character, ripened thought, and his unselfish upholding of sound surgery and the highest ethics of the profession.

The Master of Queen's College in the University of Melbourne (the Reverend Dr. Sugden) had found George Syme to be a useful and diligent member of the Council of the University for twelve years. No teacher on the staff of the University was more valued by the students and certainly no teacher was more beloved. He was remarkable in that, although most modest and shrinking from any form of advertisement, no man had achieved wider affection and esteem in the community. He stood uncompromisingly for the spiritual side of life and had never allowed himself to be submerged by the wave of materialism that swept over modern-thinking people.

The Dean of the Clinical School of the Melbourne Hospital (Dr. Zwar) recorded that George Syme had inspired thousands with the ideal he had expressed himself, that "clinical work is the crown of the whole system of medical education".

"In 'The Journal of a Disappointed Man'," said Syme in his acknowledgment, "there was a record of a man with great ambition for power, applause, the good opinion, the respect and admiration of his fellows. People regarded such a desire as something phenomenal, but if people were to express their inmost thoughts they would be inclined to say 'Aren't we all?'" He had been very fortunate. It was all very well to say he was the captain of his soul, but over some things he could not have possibly exercised control. He was fortunate in his parents whom he did not control, his teachers and his friends. It was said that the face a man saw in a mirror was his conscious self and the face seen by people was his unconscious mind. One could never tell what traits lay in the subliminal consciousness to be brought into action by some sudden stimulant, and he was glad to see that his portrait was "not too objectionable".

Repatriation.

Work in the Repatriation Department of the Commonwealth was a very severe tax upon George Syme's time and energy. Even the medical men in the community have very little knowledge or appreciation of the work of the Medical Advisory Committee of this department. Following the Great War the Commonwealth decided to consider all conditions arising from wounds, injury, or disease caused by war service, and in addition conditions of disablement of pre-war origin which had been made worse by war service; and a most generous standard for the assessment of compensation was adopted. On an average two whole forenoons a week were required for this work which made the most severe calls upon the Committee's knowledge of disease and injury. their origin, course and result. The members of the Committee were expert referees between the disabled or sick returned soldier and the taxpayers of the Commonwealth. With all the case sheets of the Defence Department together with medical histories concerning the applicant available, medical certi-

ficates and applicant's statements, cases had to be most carefully sifted and decisions arrived at as to whether the disease or disability had been caused or aggravated by the conditions of war service. In many cases records were missing or had been destroyed, medical certificates were loosely or too sympathetically drawn up, long periods of time since war service had elapsed—yet decisions had to be given. The Royal Commission on the Assessment of War Service Disabilities, Melbourne, December, 1924, reported that much difficulty had arisen owing to a confusion in the lay, and even in the medical, mind between sympathy and just appreciation of the cause of the ex-soldier's disability. The work was arduous, anxious, responsible. It is said it would be impossible to exaggerate the value and the importance of George Syme's work on this Committee. By his habit of intense concentration he displayed an uncommon skill in getting to the all-important facts of the case; and in an unemotional, cool, calm and judicial manner he brought all of these facts into proper evaluation and clearly, definitely and decisively stated his opinion. He joined in the fullest, most frank and outspoken discussion on each case with undeviating fairness in consideration of every fact and argument brought forward. More than four hundred and fifty long sessions of this nature were attended by him and it was on the evening of the day of one of these sessions that he was stricken down with his fatal illness. Before he was invalided home to Australia from London after war service he had personally obtained from the British Ministry of Pensions special information as to regulations suitable to be drawn up for the orderly and uniform consideration of many of the new problems resulting from the Great War. Part of the heavy work of the Medical Advisory Committee was the preparation of standards (so far as it was possible for such to be prepared) for the guidance of repatriation medical officers in the various States of the Commonwealth, in order that as far as possible there would be uniformity in decisions or assessments. The value of the work of this Medical Advisory Committee will be apparent some day, as will also the great unwisdom of the appointment of the Assessment Appeals Tribunal with power to reverse the decisions of a Medical Advisory Committee composed of such men as Sir Henry Maudsley, Sir Richard Stawell, the late Colonel J. Ramsay Webb (and afterwards, Colonel Victor Hurley) and Sir George Syme. This Committee's work has been of the highest order, undertaken with the fullest possible knowledge, knowledge far beyond the capacity in such matters of the Assessment Appeals Tribunal, and with the deepest sense of responsibility; yet their decisions have been frequently set aside to the greater cost of the taxpayers of the Commonwealth and, necessarily, to the creation of an injustice to many returned soldiers. The members of the Medical Advisory Committee will be the first to admit that George Syme's work on this Committee was of intestimable value to the Commonwealth.

Royal Australasian College of Surgeons.

In the manifold activities of George Syme's most busy life he surrendered himself most completely to the foundation and development of the College of Surgeons of Australasia (now the Royal Australasian College of Surgeons). The germ of the idea which led to its creation emanated from a proposal made by Sir Louis Barnett, of New Zealand, in a letter to the Secretary of the Section of Surgery of the Intercolonial Medical Congress of Australasia at Brisbane in August, 1920. From that time onward the idea was continually in the minds of many of the leading surgeons of Australia and New Zealand and was converted into action in 1924 after the visit to Australasia of Dr. William J. Mayo, of Rochester, Minnesota, U.S.A., and Dr. Franklin Martin, of Chicago. George Syme with two other leading Melbourne surgeons in 1926 sent a letter to all senior surgeons holding office in clinical schools in Australasia describing the reasons for, and the advantages likely to follow the establishment of a College of Surgeons. Delegates from Australia and New Zealand met in Sydney in August, 1926, and proceeded to form a College; a provisional executive committee with Sir George Syme as Chairman was chosen, a provisional constitution was formulated, forty of the senior surgeons of Australasia were selected to be Founders of the College and Sir George Syme was appointed provisional President. In Dunedin, New Zealand, on February 5, 1927, at the first meeting of the Founders, a Council was elected and Sir George Syme was unanimously made the President of the College, a position he held until his death.

From his own wide experience of surgical patients and surgical operations he was convinced that many legally qualified medical practitioners were performing operations beyond their technical skill and mental capacity and that in consequence a large and increasing number of patients were failing to receive proper relief from their defects and sufferings because skill and properly informed care had been lacking in their treatment. In many cases young graduates with surgical ambitions had lightly undertaken work which could not be successfully attempted by other than experienced men with highly cultivated technical skill. The results were often damaging not only to the patient but to the reputation of the profession. In other cases operations were performed without proper consideration as to their urgency or even the necessity for them. Intercommunication with senior surgeons in Melbourne and the large cities of the Commonwealth and of the Dominion of New Zealand convinced him that those surgeons had had similar experiences and had formed opinions similar to his own.

All legally qualified medical practitioners are entitled to operate when they think fit, but are required to exercise reasonable skill and care. Not all legally qualified medical practitioners are skilled operators and some never could acquire the proper skill and judgement. A very large number of them avoid operating by choice, but no one can take away from them the right to operate with the exercise of reasonable care and skill. The Fellows of the Royal Australasian College of Surgeons have always been aware of this fact. The reason for the establishment of the College was the desire to obtain a higher grade of efficiency in surgical work, and to provide for the

bestowal of some hall-mark on the efficient. For the attainment of these aims George Syme exercised to the full the whole of his mental and physical powers, his ripe experience, his sound judgement, the whole of his energy. In his home and away from it his thoughts were continuously applied to the development of the College. He attended meetings diligently whether in Melbourne or other cities and was constantly consulting surgeons and colleagues upon questions arising in its administration. At his death on April 19, 1929, little more than two years from its foundation, he left the new College with two Honorary Fellows, two hundred and nine-two Fellows, and one Junior Member, with a first-class journal of surgery and with funds under various headings totalling three thousand pounds. No other surgeon in Australasia could have filled the place he occupied in the foundation and development of the College. He was personally known to surgeons throughout Australia and New Zealand; his technical skill, his scientic knowledge, his long and wide experience as an operator, his diagnostic capabilities and his ripe, cool judgement all had won for him the trust and implicit confidence of Australasian surgeons. All knew and esteemed his life-long assiduous devotion to and work for the highest ideals of the profession, for the welfare of its members, for the promotion of its interests; equally well, they were all aware of his absolute unselfishness. He was cognizant of the bitterness of the opposition of some practitioners to the proposed College and of the varied reasons therefor and he brought to bear on his task the prudence and wisdom and judicial care with which he was so fully equipped. Every step proposed was most carefully considered in all its possible relations and effects and was often postponed for further consideration before promulgation, in order that the wisdom of the proposed step might be as certain as was humanly possible. When it became necessary to meet open opposition on the platform there was never any question of the sincerity of his purpose or the vigour of his determination and decisions. Today, with its two Honorary Fellows, its four hundred and fifty-nine Fellows, its fourteen Junior Members, its well established journal with an overseas circulation, its title of "Royal", its incorporation, and the warmly paternal approbation and sympathy of the Royal College of Surgeons of England (more particularly evinced by the most artistic silver mace sent to it by the members of the Council of the English College in the hands of its distinguished Vice-President, Mr. C. H. Fagge), it stands as an enduring monument to the unassuming surgeon who gave it birth and who sedulously and wisely directed its infant footsteps. The Royal Australasian College of Surgeons has already achieved much for surgery; requirements for the degree of Master of Surgery in the Australian Universities have been standardized; arrangements for the post-graduate training of surgeons in the Melbourne public hospitals are well under way; amounts are available for surgical research and money has already been expended thereon; a primary examination for the diploma of Fellow of the Royal College of Surgeons of England has been completed in Melbourne with a percentage of success by candidates which is higher than has been known previously in this examination in England or in Canada.

In their desire to perpetuate the memory of the good work of George Syme, the late Lady Syme, her three daughters, and her son have presented to the College, free of probate duty, the sum of two thousand five hundred pounds, the interest of which is to be used to promote research into surgical disease peculiar to Australia. The late Gordon Craig, of Sydney, one of the founders of the College and a member of the Council of the College since its inception, has made this College, so well founded by Sir George Syme, the residuary legatee of his estate. The Director-General of the American College of Surgeons, Dr. Franklin Martin of Chicago, on his visit to Australia, in 1923, stated that with Dr. William J. Mayo he had been authorized by the American College of Surgeons to inquire throughout Australia and New Zealand as to who was the outstanding surgeon of Australasian whom by the common consent of all Australasian surgeons the American College could most fittingly select for the Honorary Fellowship of the American College of Surgeons as a mark of the goodwill and esteem of its Fellows for the surgeons of Australasia. In New Zealand and Australia, in every town where there were large hospitals with operating surgeons, without exception they were given the name of Sir George Syme; the unanimity of surgeons in this respect, spread over such an enormously wide area, made a profound impression upon Dr. Mayo and Dr. Martin.

On the occasion of George Syme's death the Council of the College endeavoured to express their appreciation of his devotion to the interests of the College and their deep sense of their loss in the following resolution:

> The Council of the College of Surgeons of Australasia which includes New Zealand wishes to place on record its very deep regret for the death of its first President, Sir George Adlington Syme, K.B.E., M.S., F.R.C.S., LL.D., F.A.C.S. Hon., who was one of the Founders of the College, and who gave to its development the fullest benefit of his intellectual and physical capacity. No other surgeon in Australasia was so gifted or fitted to command the respect, confidence, and support of the surgeons of Australasia in the foundation and development of the College. His death is a most serious loss to the College as well as to the community.
>
> The Council offers to Lady Syme, her daughters, and her son, their deepest sympathy, and their most grateful appreciation of his great services.
>
> June 7, 1929.

Surgeon.

George Syme's early experiences of surgery in his student and resident medical officer days in the Melbourne Hospital were not unlike those of his master, Lord Lister, in the early days of his surgical experience in London, in 1853. Septic disease of a most virulent and fatal type was all too prevalent and caused continuous worry and most anxious thought to all of the Melbourne Hospital surgeons of those days. The most varied views were held as to the causal factors—it used to be said that when areas of the garden around the hospital wards were turned over by the gardeners' spades then erysipelas, septicæmia and pyæmia would run riot. Surgeons

were very unpleasantly familiar with such diseases in those days. Then came Listerism, the forerunner of which in the Melbourne Hospital was the carbolic spray in the operating room. The Medical Superintendent of those days (Dr. A. J. R. Lewellin) personally controlled the action of the spray during operations. There was a continuous sequence of more and more powerful steam apparatus to produce the spray until at last the room was charged with a thin fog and operator's and students' clothing became quite damp therefrom. In those days George Syme wore a moustache and a beard. When the spray was set aside and other antiseptics in addition to carbolic acid came into use for the dressings, he appeared clean shaven. The story then told was that in his characteristically complete attention to the minutest details of the antiseptic ritual he had applied the corrosive sublimate solution, then being used for the dressings, to his face and beard with the result that it became advisable to shave off what was left of the beard.

As a surgeon he never aimed at brilliancy—accurate, deliberate, and well thought out action was his plan; above all things, safety was his motto. He believed that the best safety device is a careful man. He told his students that brilliancy was not essential; they should strive to know their work thoroughly and should take pains to do it carefully and thoroughly.

Diagnosis was his strong point and in this he was unexcelled and not often equalled. His exceptional accuracy in this respect was based upon a wide, deep, up-to-date knowledge of anatomy, physiology, and pathology. On this basis he began a detailed, acutely-observant clinical examination. His innate shrewdness, his Scottish caution, and his Quaker calmness and evenness of temperament aided him in picking out the facts and throwing out nothing but the husks. From this by a most painstaking process of elimination he evolved those diagnoses which gave him his great reputation and compelled the support of his fellow practitioners. These same characteristics were exemplified in his after-treatment in operation cases. He had a strong objection to the use of opium or morphine in after-treatment, more especially in abdominal cases. The use of such drugs in his opinion masked symptoms and thereby led to dangerous results. In the *Australian Medical Journal* of May 15, 1891, will be found a paper read by him before the Medical Society of Victoria (May 6, 1891) on the nature and treatment of typhlitis so-called, typhlitis, perityphlitis, paratyphlitis. "I maintain now therefore", said he, "that almost all cases of so-called typhlitis, mild as well as severe, are due to inflammation of the appendix caeci. In fact, the possession of an appendix, a distinction which man shares with the higher apes and wombats, seems anything but enviable."

He became suddenly ill whilst in the President's Chair at the Annual Dinner of the Melbourne University Graduates' Association in Scott's Hotel, Melbourne, in the evening of Saturday, April 12, 1929, shortly before he would have delivered the Annual Address. He was at once removed to his home in Malvern, where he died on the following Friday night, April 19, 1929, and was buried in the family grave in Brighton Cemetery on Saturday, April 20, 1929. The suddenness and the instant gravity of his illness followed so soon by his death was a serious shock to Lady Syme. Their married life had been a remarkably happy one and their mutual attachment was of the deepest and most serious nature; the separation wounded Lady Syme bitterly and it gradually became evident that she would not long survive him. She went peacefully to her reward on March 19, 1931.

> He first deceas'd, she for a little tried
> To live without him, liked it not, and died.

The name of Syme is honoured when leaders of British surgery are mentioned—in the political history of Victoria the name will abide. George Adlington Syme had many talents; he gained another ten. No one wishes to proclaim him a superman. The ideal man is he who unceasingly strives to bring out and to develop the best that is in him for himself and his dependants, for his fellow men and for the State. Such is supposed to be the aspiration of all men; in actual experience it occurs with the few. The glorious example of the few must be perpetually held up to the community to inspire them to emulate not necessarily the deeds of supermen and heroes but at least the heroic deeds of men no better equipped, no more greatly favoured than themselves. From boyhood to his maturity Syme unceasingly gave of his best to his duty, to his work, to his fellows, to the State. Outside of his professional work, his thoughts were, as they had been at school and college, for the welfare and betterment of his fellows.

Some of his best literary work was prepared for the Australian Church Literary Society. It is not hard to see the influence of his grandfather, father and uncles in his determination to leave the Presbyterian Church and follow the Reverend Doctor Charles Strong in the formation of the Australian Church. His finest paper was one on altruism which was a full embodiment of his views and a mirror of his mind.

On October 2, 1894, he read a paper before this Literary Society on the emotions and social progress, in which he held that although the emotions are educated by suffering, they have been overlooked in all past educational systems—that true education, the development of all the faculties, emotional as well as intellectual, and in just proportion, is yet to be tried. On June 28, 1928, he delivered an addendum to that lecture and proclaimed that humanity as a whole can progress only by the progress of the individuals of which it consists. The survival of the fittest as applied to communities is not necessarily opposed to the practice of altruism or what might be termed a form of voluntary socialism by their individual members. It might be that in the inter-commercial struggle those communities in which the successful members helped those who failed would have an advantage over those communities in which the successful crushed down and destroyed the weaker members. The more altruistic communities would then survive, and in them every individual could be developed to the utmost capacity as the

result of competition, and would then voluntarily place his requirements at the disposal of the State, and sacrifice his own interests to those of others and of future generations, thus carrying into effect that principle of self-abnegation which is the essence of most of the great religions of the world.

As he spoke, so Syme acted. The Victorian Branch of the British Medical Association judged most wisely that the life and work of such a man should not be allowed to pass as a fleeting memory but that his life, his actions, his ideals should be preserved by lectures to those who continue to carry on the work of that profession of noble tradition and humanitarian devotion of which he was so great an exemplar.

French King: Such a man
Might be a copy to these younger times;

Bertram de Roussillon: His good remembrance, Sirs,
Lies richer in your thoughts, than on his tomb.

HYPERPYREXIAL HEATSTROKE: A MESOPOTAMIAN EXPERIENCE, WITH SOME ÆTIOLOGICAL VIEWS AND A METHOD OF PREVENTION RESULTING THEREFROM.

By K. G. HEARNE, M.D., Ch.B. (Edinburgh),
Arncliffe, New South Wales.

WHILE I was present with the British Expeditionary Forces in Mesopotamia from 1916 to 1918, several heat waves of great severity were experienced, especially during the months of July, August and September, 1917. At this particular stage of the campaign I was attached to Number 3 British General Hospital at Basra, and was thus afforded a rare opportunity of studying, in their clinical aspect, a large number of cases (about 240) of true hyperpyrexial heatstroke—that deadly condition which accounted for the loss of so many lives of British subjects connected with the Force.

There are many parts of the world where occasional cases of heatstroke occur during the course of every summer, and it is a fairly common experience in any country where the shade temperature reaches 110° F. or more during the course of a heat wave. Multan, Peshawar and the Sind district in India are notable areas in this respect, but the southern portion of Iraq seems to be a specially distinguished region, and is regarded, probably quite correctly, as the world's greatest heatstroke centre. Here were gathered during the Mesopotamian Campaign large numbers of British soldiers totally unaccustomed to the extreme heat of the locality and forced by the exigencies of war to live under conditions of more or less inadequate shelter.

A brief reference to some of the chief geographical and climatic features of the occupied territory will help to explain the difficulties that confronted the Army Medical Service in its attempt to control the occurrence of heatstroke among the troops in this particular type of country.

Apart from its historical associations Mesopotamia possesses very few attractions, and from the residential point of view it is one of the most detestable countries in the world. On account of its appalling climate the soldiers regarded it as "hell upon earth"—a veritable fire-pit which is most aptly described by the inimitable language of the British "Tommy".

This inhospitable land consists of a vast expanse of arid plain, at no point rising higher than one hundred feet above sea level, and formed, not of sand as in the Sahara or Libyan Desert, but of dried alluvial mud deposited throughout the ages by the two great rivers Tigris and Euphrates which traverse it and unite to form the broad Shatt-el-Arab prior to its entering the sea at the head of the Persian Gulf.

The southern part of Mesopotamia—the portion over which the bulk of the troops were distributed—is in reality a flat delta. In Biblical times the two rivers had separate mouths, and the alluvial deposits carried down by them in the course of centuries have gradually built up the delta, causing it to advance upon the coast line to such an extent that Ur-of-the-Chaldees, once a flourishing port of Ancient Babylonia, now lies, a heap of buried ruins, about one hundred and sixty miles inland.

The mean annual rainfall of Mesopotamia is only six inches, and this rainfall is limited to four months of the year—November to February. The remaining months are absolutely rainless, not a drop of rain falling from March to October; hence there is a complete lack of vegetation except for a narrow belt of date palms, never more than half a mile wide, skirting the river banks, and watered by artificial irrigation canals.

One looks in vain for the "Garden of Eden", but finds instead a treeless waste affording no natural protection from the fierce blazing sun, the rays of which, pouring down from cloudless skies, are reflected from the light brown soil making the atmospheric temperature unbearable. In the words of Edmund Candler "one feels as if one were being licked by gusts of flame".

At the outset of the British occupation, house accommodation was limited to the comparatively few native towns and villages situated chiefly in the neighbourhood of the main rivers. The Moslem city of Bagdad on the Tigris, the towns of Basra, Nasiriyah, Kut, Amara *et cetera* all provided buildings of various types. Many of these were taken over by the Army and transformed by the engineers into hospitals, offices and residences for the headquarters staff. By this means a favoured few enjoyed a reasonable amount of protection from the heat, but the main body of the troops, during the early days of the expedition, had to remain satisfied with canvas tents, where the temperature would sometimes reach 135° or 140° F. Later, the construction of large wooden huts was carried out by the engineers, partly with the object of increasing hospital accommodation, and partly as a means of providing better housing for the troops; thus the living conditions of the Army of occupation steadily improved. Toward the end of the campaign a state of comparative luxury existed, especially in the vicinity of the chief bases, where electric power stations and ice works were eventually installed, and these played an important part in the solution of the heatstroke problem.

It must not, however, be assumed that the control of heatstroke depended merely upon the provision of shelter from the direct heat of the sun, though this was, of course, a very important factor. The hospital huts for instance, had wide shade verandas and roofs spread 15 centimetres (six inches) thick with dried mud. Overhead electric punkas were also provided, yet the occurrence of heatstroke cases among the patients within these huts was an exceedingly common daily experience.

Number 3 British General Hospital, where I was stationed during the summer of 1917, was a hospital of 1,040 beds situated on the right bank of the Shatt-el-Arab River at Basra. It consisted of a large brick building (originally the palace of the Sheik of Mahommerah) surrounded by twenty-one hospital huts varying in size from twenty to sixty beds. Patients with heatstroke occurring in these huts and at the neighbouring camps would be immediately transferred to the cooler precincts of the thick-walled "palace", where a room was specially fitted up with ice-water sprays for reduction of the hyperpyrexia. The heatstroke room had a cement waterproof floor on which stood three iron bedsteads. The naked patient was placed directly on the crossed lath framework of the bed to allow free circulation of air around his body while he was sprayed with ice-water in full exposure to the air-current from an electric fan. This we found to be a much quicker method of reducing hyperpyrexia than by rubbing the skin with lumps of ice. The ice-water was supplied from a two hundred gallon tank situated above the heatstroke room, containing water in which blocks of ice were floating. The tank and pipes leading to the room below were thickly surrounded by insulating material to prevent the water from gaining heat from the comparatively hot atmosphere of the rooms. The patient's rectal temperature during the spraying treatment was taken every three or four minutes, and when it had subsided to 38·9° C. (102° F.) he would be removed to one of the neighbouring rooms and put to bed, covered by a sheet only. The temperature of these rooms, though considerably cooler than the huts, would vary from 101° to 104° F. during a heat wave, and it was a common experience for the patients to show irregular rises of temperature after their hyperpyrexia had been reduced in the heatstroke room.

During the heat wave in July, 1917, the daily maximum shade temperature at Basra (recorded strictly under observatory conditions) averaged 119° F. for eighteen consecutive days, and it ranged between 105° and 122·2° F. for the entire period between July 7 and September 11. Heatstrokes occurred in varying numbers on all except five of these days, forty-four cases occurring at the Basra base on one day alone (July 15).

From the above descriptive notes it will be readily seen that the Mesopotamian campaign presented a unique opportunity for the study of heatstroke, and there can be no doubt that it has been the means of establishing a much clearer conception of the true nature of this condition.

The Effects of Heat on the Body.

Effects of heat on the human body may be classified into four types: (i) Hyperpyrexial heatstroke, (ii) heat exhaustion, (iii) sunstroke, and (iv) heat cramps.

A brief reference to a few of the principal features of each type will serve to mark the distinction between them.

(i) *The Hyperpyrexial Variety.* In the hyperpyrexial variety the outstanding point is the remarkably high body temperature which may be anything from 41·5° to 46·1° C. (107° to 115° F.) in extreme cases. The attack usually comes on quite suddenly with mental excitement and delirium, passing rapidly into a state of unconsciousness and coma. The skin is absolutely dry and burning hot (some doubt on this point will be dealt with later on). The breathing is laboured and stertorous, and convulsions of epileptiform type are almost always present. Frequency of micturition is a premonitory symptom and there is much evidence that suppression of perspiration also precedes the attack.

(ii) *Heat Exhaustion.* In the heat exhaustion form the body temperature may be even subnormal; if raised, it is only slightly raised. The skin is pale, moist and cool, the pulse soft and breathing shallow.

(iii) *Sunstroke.* Sunstroke is said to be a form of shock due to exposure to the direct rays of the sun, which contain actinic as well as heat rays. It is believed by some that the rapid bombardment of the actinic rays can produce violent injury to the nerve centres, resulting in a sudden state of collapse and even death from cardiac or respiratory paralysis in severe cases. The general condition of the patient resembles that seen in heat exhaustion.

(iv) *Heat Cramps.* Heat cramps are a condition often seen in the engine rooms of liners in the tropics and in iron foundries. Painful cramps attack the arm, leg and abdominal muscles.

In Mesopotamia it was the grave hyperpyrexial type that chiefly occupied our attention, other forms of heat effects being regarded as of secondary importance. The mortality from the hyperpyrexial variety is generally put down at about 45%, but this figure can be greatly exceeded or diminished according to the extent of time that elapses before cases are brought under treatment.

The Cause of Hyperpyrexial Heatstroke.

In studying the literature of this subject one is struck with the variety of opinions that are expressed by different writers regarding the ætiology and pathology of hyperpyrexial heatstroke, and the general position is still, more or less, in a state of uncertainty.

The question has even been raised as to whether heatstroke should be regarded as a separate clinical entity at all; one writer considering it to be only a symptom, on a hot day, of malignant tertian malaria, while another view holds that it is simply an exaggerated form of phlebotomus fever. At present, I believe, it is generally agreed that hyperpyrexial heatstroke is a definite clinical entity, occurring apart from intercurrent diseases, and under conditions associated with waves of exceptionally high atmospheric temperature. The theory that it is an auto-

intoxication resulting from the action of heat on the body tissues has a number of supporters, while some incline to the opinion that, as a result of more active metabolism, there is a retention of carbonic and lactic acid, with a demand upon the alkali content of the blood resulting in an acidosis. Others again are content to describe it vaguely as a breakdown of the heat regulating centre in the brain. Sambon's theory which regarded heatstroke as a specific infectious disease due to the action of an unknown microorganism would now appear to be finally discarded.

The above are some of the numerous suggestions that have been put forth from time to time regarding the ætiology of this peculiar condition. Attempts have been made on various occasions to investigate the nature of heatstroke by experiments on animals. Aron in the Philippines, S. Koizumi and H. C. Wood have all contributed information of more or less interest in this direction.

Wood's experiments, carried out in 1870 and first published in 1872, tend to show: (i) That heatstroke may be produced in animals as readily as in man either by natural or artificial heat, the symptoms being similar to those seen in man. (ii) The heating of the brain of a mammal produces sudden insensibility with or without convulsions at a temperature of 42·2° C. (108° F.) and death when a temperature of 45° C. (113° F.) is reached. (iii) No poisons are developed in the blood, but a deterioration of the vital fluid takes place due to the rapid tissue changes induced by the fever, and if the heat be withdrawn before it has produced permanent injury to the nervous system, blood or other tissues, the convulsions and unconsciousness are immediately relieved and the animal recovers.

From these facts and deductions he believed that heatstroke is a fever depending not on blood poisoning, but on heat.

Some interesting experiments have also been carried out on the human subject resulting in the collection of further evidence. Such investigations, of course, cannot be pressed beyond a certain limit and the ultimate result must necessarily be a matter of inference.

In January, 1774, and April, 1775, Dr. George Fordyce and Dr. Blagden exposed themselves to dry and moist heat in a specially prepared room. They found that they could remain in a dry temperature at 260° F. without apparent discomfort or rise of body temperature for thirteen minutes, while a beefsteak was well cooked (assisted, however, by blowing the hot air on it with a bellows) and eggs were roasted hard. Exposure to a moist atmosphere at 130° F. for a quarter of an hour caused a rise in mouth and urine temperature to 37·8° C. (100° F.). The conclusions were that if the air be moist as well as hot, evaporation of sweat cannot proceed rapidly enough to prevent the body temperature from rising.

Castellani and Chalmers record results of experiments carried out in the moist, still atmosphere of the engine room of a liner in the Red Sea and tropical regions. These resulted in evidence that such an atmosphere could produce different effects in different subjects. Some showed a tendency to the development of hyperpyrexia, although in one case the inclination was toward heat exhaustion with only slightly raised temperature. The inference is that had the experiments been continued for a sufficient length of time, some of the subjects would have developed hyperpyrexial heatstroke, while one would have passed into a state of heat exhaustion.

J. S. Haldane conducted experiments upon himself and assistants in the hot Dolcoatt Mine. He concluded that the temperature of the wet-bulb thermometer formed the best guide to a person's capacity to tolerate heat.

The observations of Zuntz and Tendlau on a man whose skin possessed no sweat glands are of considerable interest. They found that the heat of the sun in summer or the performance of muscular work for a little while caused a rise in the subject's body temperature to 38·9° C. (102° F.). The man himself counteracted the effects of his natural disability by soaking his shirt in water frequently during hot weather.

Experience in Mesopotamia has led me to the view that the most reliable evidence regarding the true nature of heatstroke is to be obtained by simple observation of cases as they occur in large numbers under natural conditions. I have repeatedly watched the process in all stages of its development, and have been forced to the following conclusions:

(i) That the essential cause of heatstroke is suppression of perspiration, which invariably precedes the attack for a more or less considerable time. There is no surface moisture available for evaporation, hence the body is not only deprived of its power to lose internally produced heat, but actually gains heat from the surrounding atmosphere which may be 30° to 40° F. higher than the normal body temperature. The brain and tissues rapidly become superheated resulting in the typical convulsions, coma and death if the patient be not subjected to early treatment.

(ii) That heatstroke is absolutely preventible. Suppression of perspiration provides us with a most reliable premonitory sign, and the harmful result of it can be easily counteracted by the simple process of artificially supplying moisture to the skin surface when nature has failed to do so.

During the 1917 summer my duties at Number 3 British General Hospital included treatment of patients in the heatstroke room and also charge of a sixty-bed hospital hut which was devoted entirely to the treatment of patients suffering from phlebotomus fever, hence the majority already had more or less pyrexia.

In the first few days of the July heatwave my hut produced nine cases of heatstroke and four of the patients died. These patients gave me practically my first experience of this condition, and the most obvious clinical feature in all of these patients was the intensely hot, dry skin with complete absence of perspiration, while others in the hut were sweating profusely. The atmospheric temperature of the hut was in the vicinity of 112° F. at the time, and according to physical laws all dry objects (for example, articles of furniture *et cetera*) tend to take up the same temperature as that of the surrounding atmos-

phere. It seemed perfectly obvious that the human subject with dry skin in direct contact with an atmosphere at a temperature of 112° F. and breathing the same heated atmosphere into his lungs would also conform to physical laws and rise to the temperature of his surroundings. In fact, a rise to even greater height might reasonably be expected owing to the additional effect of internally-produced body heat.

Reasoning upon these lines it appeared at first that the prevention of hyperpyrexia depended upon the ability to reestablish the sweating mechanism so that heat loss may take place by the natural evaporative process. Pilocarpine was injected, but it proved an utter failure so far as its action on the sweat glands was concerned, though it resulted in a copious flow of saliva from the salivary glands.

On the afternoon of July 11, 1917 (about the fifth day of the heat wave) three heatstrokes suddenly occurred in my hut at practically the same moment. Each of the victims leaped from his bed and rushed madly about the hut in a state of wild delirium colliding with everything in his course. Two of them were powerful men and required the combined efforts of myself and staff of orderlies to control their struggling while they were being rubbed with ice on the floor of the hut to reduce their hyperpyrexia. Treatment was soon effective and these two patients eventually recovered. The third man, however, did not fare so well. There was no trained staff available at the moment to treat him and he had to be left to the care of several fellow patients who volunteered their services. Attempts were made to reduce his hyperpyrexia by the usual methods, but he died in about fifteen minutes. By this time the morale of the other patients in the hut was becoming seriously affected. Nine heatstrokes with four deaths had taken place in this hut within a few days and there were seven or eight patients whose dry skin and high temperature indicated that they, too, were liable to break into an attack at any moment. In order to prevent this I decided to wet their skins so that the physical effect of sweating might be brought about by artificial means. A pneumatic disinfecting spray which I found in the hut came in handy. This was filled with ice-water and an orderly instructed to strip and spray the pyrexial patients as they lay in their beds. Meantime I had procured two electric fans which were hurriedly connected by a long flexible cord to the electric supply of the hut. These were placed by the beds of the most severely affected patients with the object of enhancing the evaporative process. There were no more heatstrokes in the hut for the remaining portion of that day.

The next afternoon I instituted in my hut a system which was designed to prevent the occurrence of attacks by detecting premonitory indications at an early stage. The patients were warned to report immediately any frequency of micturition or stoppage of sweating. Regular inspections (hourly on the hottest days) of all the patients in the hut were carried out either by myself or by a trained orderly in order to detect any who might suddenly develop suppression of perspiration while asleep. A mere touch on the chest or abdomen was sufficient to recognize the typically hot dry skin of oncoming heatstroke. If the patient's temperature were 39·4° C. (103° F.) or more, he would be stripped and covered with a sheet which would be sprayed at intervals with just sufficient ice water to keep the sheet moist without damaging the mattress. Evaporation was assisted by the current of air from the overhead electric punkas which sufficed to keep the patient's temperature under control until after sundown, when the intensity of the day's heat generally abated, rendering further protection for that day unnecessary. There were, however, a few cases in which a portable electric fan at the bedside was also required and occasionally it was found necessary to continue the wet sheet treatment until late in the night.

The above-mentioned system was adopted throughout the remaining portion of the 1917 heatwave and as a result only two more cases of heatstroke occurred in my hut from July 12 onwards. The official figures for the whole Basra Base showed daily occurrences between July 7 and September 11, 1917, at the rate of 8·23 cases per day. Neither of the two patients referred to had been placed under preventive treatment as they became affected unexpectedly at a time when vigilance was comparatively relaxed.

So far we have considered heatstroke occurring among troops lying in bed in a hospital hut and suffering from (or recovering from) phlebotomus fever. We will now view the situation from a different angle—the occurrence of attacks among able-bodied troops moving about under more or less exposed conditions and free from the complication of any febrile illness.

Early in August, 1917, large numbers of British reinforcements began to arrive in Mesopotamia direct from England in transports that were timed to arrive at the head of the Persian Gulf at intervals of six or seven days. The deep draught of these vessels prevented their crossing the Shatt-el-Arab Bar and thus completing the journey to Basra. To overcome this difficulty it was the custom for each ship to anchor near the Shatt-el-Arab lightship (about twelve miles from the river mouth) and there transfer its troops and cargo to a liner of shallower draught which took them up river to Basra, a distance of about eighty miles from the anchorage. The time occupied in this river journey was about eleven hours, and the first instalment of these troops had a very trying experience, numerous cases of heatstroke and a considerable number of deaths having taken place on the trip.

I was given orders from Headquarters to proceed down river with a staff of six orderlies to meet the remaining transports as they arrived and to assume responsibility for dealing as effectively as possible with the heatstroke problem among the troops.

On one of these occasions a "Union Castle" liner anchored near the lightship at 8.30 a.m. on August 14, 1917. The ship on which I travelled from Basra arrived alongside at 11.30 a.m., and on crossing to the larger transport, I found the senior medical officer in one of the ship's bathrooms already engaged in treating a patient with heatstroke. The patient died a few minutes afterwards.

We considered the question together and decided to adopt the following plan: A space on the main deck was roped off and reserved for treatment. Copies of a leaflet which I had prepared on the journey down river were handed to the non-commissioned officers, who read them to the troops mustered on deck. The leaflet described briefly the chief indications of oncoming heatstroke and invited anybody with suspicious signs to report for inspection at the "treatment area" on deck. The leaflets were then posted in various parts of the ship for further reference.

Of those who reported, some were immediately stripped and placed in wet sheets on deck, and others were detained in a group near by for convenient observation. No further attacks occurred among the soldiers during the remainder of the day.

At about 9 p.m., however, I received a message that the chief steward of the "Union Castle" liner was down with heatstroke. The officers and crew of the ship were entirely under the care of the ship's doctor, and I had no responsibility in this matter, but decided to offer consultation with the doctor if he wished it. The patient, however, died shortly afterwards.

The ship's doctor told me that he had already lost another member of his crew at 3 p.m. that afternoon (I was unaware of this at the time) and we discussed the position, with the result that he, too, decided to adopt our plan of inspection and prevention among those who were under his medical care.

The next day (August 15) the two ships lay alongside each other at the anchorage, transferring cargo and war material during the cooler hours of the day and no heatstrokes occurred, though a considerable number of the troops and a few of the crew were under preventive treatment on deck.

On the following morning (August 16) the troops were transferred to the smaller ship (one of the "City" line) which started for Basra. The men were now under less favourable conditions

than on the "Union Castle" boat, and overcrowding was unavoidable, especially on account of the large amount of deck space that had to be reserved for dealing with the heatstroke patients.

The same plan of inspection, observation and treatment was adopted on the "City" liner as we had already carried out on the larger transport during the two previous days. The net result of the journey up-river was: five cases of heatstroke, forty-three patients under preventive treatment (most of them being transfers from the observation group), eighty (roughly) in the observation group. Of the five actual heatstrokes four patients were discovered by their comrades, lying unconscious in various parts of the ship, having failed to avail themselves of the offer of early inspection. One, however, was already in the observation group but was accidentally overlooked by the inspecting orderly and the attack of heatstroke overtook him before preventive treatment could be applied.

However, none of the five patients who reached the fully developed stage died, nor were there any deaths on the transports from the time that this system of supervision was instituted.

I attribute the recoveries entirely to the fact that the necessities for reducing hyperpyrexia (ice and a portable electric fan on deck) were kept ready to hand, and the patients were brought under treatment within a few minutes of their onset.

Experiences in a hospital hut on land, and also on one of the transport trips have been described in detail because of their important bearing upon the ætiological question. They illustrate the success of a system of prevention which was based upon the contention that suppression of sweating always precedes heatstroke and is, therefore, most likely to be the determinative cause of it.

Some authorities still appear disinclined to believe that suppressed sweating takes place before the attack of heatstroke reveals itself, though they admit that it is present at the onset of the attack and for some days afterwards. It is most desirable that some agreement on this point should be established, for it would at once provide a clear explanation of the phenomena of heatstroke and give us a sound ætiological foundation to support an orthodox system of prevention.

I have, on several occasions, observed suppression of sweating in patients who developed heatstroke some hours later, and have obtained evidence on this point by questioning numbers of others after recovery from their attacks. This evidence strongly supports the view that suppression of perspiration may be present for a time varying from one to forty-eight hours prior to the attack.

While I was carrying out the system of prevention in the hospital hut during the heatwave, five or six patients who had stopped sweating would be discovered almost every afternoon, and I estimate that practically all of them would have developed heatstroke later on if preventive treatment had not been applied. To obtain absolute proof of this, however, would have involved the necessity of wilfully withholding preventive treatment from some of these patients and using them as controls. Nevertheless the circumstantial evidence provided by the success of this simple preventive method is practically conclusive.

It is universally agreed that frequency of micturition occurs before the attack and is a valuable premonitory symptom. The activities of the kidney and the sweat glands are known to be closely related, and it is a common observation that the kidneys excrete most water in winter when the sweat glands are physiologically inactive. The frequency of micturition associated with heatstroke (occurring, as it does, in the midst of a heatwave) is therefore, most likely to be the result of a pathological suppression of sweating. Hence if the frequency of micturition precedes the attack the suppression of sweating must certainly do so.

The cause of the suppression of sweating is a more difficult problem. In a series of ten cases I injected 0·013 gramme (one-fifth of a grain) of pilocarpine subcutaneously, but not a trace of perspiration could be obtained though the salivary glands responded with profuse salivation. This indicates a definite failure of the sweating mechanism and I would suggest that the failure is probably due to exhaustion of this mechanism brought about by several previous days of extreme hyperactivity. The function of the salivary apparatus, on the other hand, remained intact, probably because it had not been subjected to any preliminary overstrain.

When discussing the many aspects of heatstroke with Professor Leonard Hill some years ago, I asked his opinion on the question of exhaustion of the sweating mechanism, and he informed me that from the physiological point of view this is quite feasible.

Probably the most popular theory regarding the causation of heatstroke is one which lays the blame entirely upon a toxin assumed to be produced in the body by the action of atmospheric heat. The chief evidence in support of this theory is derived from the fact that a patient, after reductionof his hyperpyrexia, will often show a tendency to irregular rises of temperature or even to relapse into the hyperpyrexial state. This, however, does not necessarily prove the presence of a toxic influence at all, for the pyrexial tendency can be equally well explained by the physical effect of a high atmospheric temperature acting in conjunction with a dry skin.

Immediately after reduction of hyperpyrexia it was the custom at our hospital to remove the patient from the heatstroke room to one of the other rooms of the "palace" where the atmospheric conditions were the coolest obtainable. These rooms, however, frequently showed an atmospheric temperature of 102° to 104° F. and this fact alone would easily account for pyrexia in the body of a patient with suppressed perspiration.

There is no intention, however, to maintain that the body temperature of a non-perspiring patient merely rises and falls with the atmospheric temperature, and that toxæmia plays no part whatever in the causation of heatstroke. It probably does so in a certain number of cases and may, I think, easily account for the comparatively few attacks that occur between the hours of sunset and sunrise. There is not the slightest doubt that the huge majority of heatstrokes occur between 2 p.m. and 7 p.m., and especially between 3 p.m. and 5 p.m., that is, shortly after the hottest part of the day, but I have seen them take place at 9 p.m., 2 a.m. and even at 5.30 a.m. when the atmospheric temperature had fallen to about 80° F. In these latter instances there was probably an excessive amount of internally-produced

body heat, possibly toxic in origin, or resulting from increased metabolic activity, which the dry skin of the patients had failed to dissipate by evaporation, and hyperpyrexial heatstroke was the inevitable result.

Atmospheric humidity, too, is often stated to be the chief cause of heatstroke, the air being so fully charged with moisture that it is unable to evaporate the body perspiration at a sufficiently fast rate to balance the amount of heat internally produced and acquired from the atmosphere; consequently the body temperature rises and heatstroke supervenes.

If the perspiration is secreted but not evaporated, it must remain on the surface of the body and we should therefore find the skins of heatstroke patients not only moist but drenched with perspiration. From my Mesopotamian experience of two hundred and forty cases I can definitely state that not one of the patients showed the slightest trace of moisture on the skin, nor do I believe it possible for anyone to be attacked with true hyperpyrexial heatstroke unless suppression of perspiration has already set in.

One author in describing the fully developed attack has stated that "the skin is intensely hot and generally dry, but occasionally moist". I have had no experience of heatstroke in humid climates and was at one time inclined to believe that the condition may possibly be associated with a moist skin when occurring in the damp atmosphere of such places as Calcutta and Colombo. This idea, however, was altered upon reading Sir Leonard Rogers's account in his book "Fevers in the Tropics" where the following remark occurs on page 293:

> On examination during the fully developed attack the most noteworthy feature is the intense heat of the skin and its dryness, with no trace of perspiration, even in the sweat-producing damp temperature of Calcutta.

It appears to be a characteristic feature of humid tropical climates that the thermometer does not usually register very high figures. Most of us are quite familiar with the discomfort produced by the heat of Colombo, yet the highest official shade temperature that has ever been recorded there is only 95·8° F. I understand, also, that heatstroke is not common in these humid regions probably because the temperature never becomes sufficiently high to be an important factor. It is somewhat surprising, too, that Colombo, where the sun passes directly overhead on two occasions every year, should have much lower temperatures than Basra where the sun never reaches closer than seven degrees to the prime vertical.

Whatever charges may be brought against the Mesopotamian climate in summer, humidity would not appear to be one of them. The average percentage humidity for July, August and September, 1917, computed from official records taken at 4 p.m., was 19·9%, 22·7% and 17·9% respectively.

The desiccant effect of the atmosphere was at times so marked that, when walking in the open, the conjunctival surface of one's eyes would tend to dry up and cause the eyelids to stick during the normal process of blinking. This effect was particularly noticeable one hot afternoon, at a moment when heatstrokes were occurring in dozens all over the Mesopotamian territory, and the incident is related merely to emphasize the fact that the cause of the heatstrokes, on that afternoon at any rate, was certainly not a saturated humid atmosphere.

I have in my possession a chart, compiled with the most careful accuracy, showing the meteorological records (dry and wet bulb thermometer, also 8 a.m. and 4 p.m. humidities) on every day during July, August and September, 1917, plotted against the heatstroke occurrences for the Basra base on those days. Such a chart would naturally be expected to present some valuable information concerning the relationship between heatstroke and meteorological conditions. Unfortunately, however, it proves nothing, the general trend of the various curves being more or less inconsistent. In a broad sense it may be said that the incidence curve, if it follows any of the meteorological curves at all, conforms fairly closely to that of the wet bulb thermometer.

The occurrence of heatstroke, with three deaths, on the "Union Castle" liner (already referred to) affords strong evidence that this condition is not merely an exaggerated form of phlebotomus fever or malaria as some have maintained. Infection of the troops with these diseases could not have taken place on the voyage, as the ship travelled from England to the Persian Gulf *viâ* the Cape to avoid the enemy submarines in the Mediterranean and called only at Capetown and Durban. These stoppages took place on July 16 to 18, and 21 to 30 respectively, during the southern midwinter when the *Phlebotomus pappatasii* (if it exists at Durban at all) would be in its larval stage, and there would likewise be no possibility of malarial infection by the *Anopheles maculipennis*. Moreover, the Senior Medical Officer's official report stated that no case of malaria had occurred on the voyage.

Incidentally it might be mentioned that the outbreak on this ship also provides conclusive proof in opposition to Sambon's theory that heatstroke is an infectious disease of microbic origin.

Whatever may be the actual cause of the patient's hyperpyrexia, it would appear certain that the convulsions and unconsciousness are the direct result of the action of superheated blood on the brain. This can be clearly demonstrated in cases that are seen at the moment of onset of the attack and brought under immediate treatment. This experience has happened to me on seven or eight occasions.

> What was, perhaps, the best of these examples occurred while I was on duty on one of the troopships at the Shatt-el-Arab bar. A man walked along to the "treatment area" (the reserved deck space where everything was kept in readiness for immediate treatment of an attack) and asked to be examined as he was not feeling well. He had the typical hot dry skin of oncoming heatstroke and, as he was conscious, I put a thermometer in his mouth, laid him on the deck and proceeded to remove his clothing. While his temperature was being taken he showed a great tendency to grind his teeth on the thermometer, and I had barely taken this from him when he suddenly became unconscious, commenced to shout and struggle violently and tried to jump overboard. The mouth temperature showed 42·5° C. (108·6° F.). Cooling measures (cold water, ice and an electric fan) were immediately applied and pressed energetically. The next temperature (rectal) taken a few minutes afterwards

was 42·8° C. (109·2° F.), and from this time his temperature steadily receded and the chief signs gradually subsided until, in about fifteen minutes, when his temperature had fallen to 40·4° C. (104·8° F.) the patient's struggling had entirely ceased, and he was nearly conscious. Shortly afterwards he was answering questions apparently sensibly. Treatment was stopped, and when I visited him about an hour afterwards he was perfectly conscious and able to discuss the proceedings up to the time he was laid on the deck, but did not remember my asking him questions at the end of the treatment. Beyond the usual slight rise of temperature during which the patient required a little nursing while his suppression of sweating lasted, he made a quite uneventful recovery.

The point about this case, then, is that the attack developed with the rise of temperature and recovery took place with its fall.

The simple inference is that the heated blood having been allowed to act on his brain and tissues for the minimum of time produced the minimum amount of damage, which was, in consequence, quickly recovered from, although the symptoms were startling enough at the time. If on the other hand, the symptoms were caused by a toxæmia, it is hardly likely that they would have been relieved so rapidly by merely rubbing the patient's skin with ice.

From what I have seen of such cases treated early I believe it represents what would happen in practically all instances if only we could place the patients under energetic and careful treatment from the moment of onset.

The great majority of patients, however, are only placed under treatment after they have been unconscious for some time. Under these circumstances it is quite probable that the prolonged effect of heated blood acting on the brain and tissues would produce more lasting damage and perhaps a form of autointoxication which might partly explain the irregular rises of temperature that occur in such cases after the original hyperpyrexia has been reduced.

Much of the substance of this paper has been presented in the form of a recollection of events. This plan was chosen partly with the object of describing heatstroke as it is actually met with, and partly to demonstrate the fact that by recognizing suppressed sweating as the chief premonitory sign of onset, we have at our disposal the means of exercising complete control over a condition which, under ordinary circumstances, is associated with an exceptionally high rate of mortality. Any layman is capable of observing this warning sign in himself, and he should be trained to realize its important meaning when exposed to dangerous atmospheric conditions.

In dealing with heatstroke, then, we should aim primarily at prevention which is attainable, not by the employment of some brilliant therapeutic measure, but by the adoption of an organized system of management which, in itself, is the essence of simplicity. Secondly, we should look upon the fully developed attack much in the same way that the fire brigade regards a building on fire, and realize that there is not a minute to lose. Prompt and energetic action is necessary in order to bring the hyperpyrexia under control at the earliest possible moment, otherwise there will be very little hope for the patient's recovery.

THE GEOGRAPHICAL DISTRIBUTION AND METEOROLOGICAL ASPECT OF HYPERPYREXIAL HEATSTROKE.

By NORMAN B. FRIEND.

(From the Medical Branch, Government Insurance Office of New South Wales.)

WITH the advent of the *Workers' Compensation Act* (New South Wales), various claims have arisen from time to time regarding illness alleged to have been caused by exposure to the sun and high atmospheric temperatures in the performance of open-air work in New South Wales.

With the object of determining as to how far these claims were justified, I have endeavoured to collect some information regarding the meteorological and other conditions in Australia for the purpose of comparing them with similar conditions existing in countries such as Mesopotamia and Northern India where true hyperpyrexial heatstroke causes great havoc among the white population during the hottest months of the year.

It is interesting to note that geographically the heatstroke area appears to be mainly confined to the countries in the vicinity of the Mediterranean Sea, namely, Arabia, India and Northern Africa, whilst in Australia, the disease could not be considered so prevalent. It will be readily seen from the accompanying map that: (i) The State of New South Wales is situated about as far south of the Tropic of Capricorn as Mesopotamia is north of the Tropic of Cancer. (ii) The State of Queensland is about as far south of the equator as southern Asia and India are north of the equator.

A comparison, however, of the midsummer isotherms throughout Australia with those of Northern Africa, Arabia and India, tells us at a glance that the people of Australia do not experience such trying conditions as do the inhabitants of those large territories through which the Tropic of Cancer runs.

The explanation is obvious. Where the Tropic of Cancer traverses Arabia and Northern Africa, there are the largest expanses of land in the world and the major portions of these territories consist of expansive arid deserts where solar energy falls on barren land and, not being absorbed by plants, spends itself in the work of heating the air. Australia is more favourably situated. It is isolated from other land masses, its deserts are, comparatively speaking, small and it is blessed with abundance of vegetation. Its temperatures can, therefore, respond more easily to the seasons than those large territories where true hyperpyrexial heatstroke is prevalent. In addition, the prevailing winds along the coast of New South Wales are the north-easterly and southerly winds, cool breezes from the sea which tend to lower the temperature of the air.

The summer conditions are certainly more trying in Central Australia, in and around the desert areas, than in the coastal areas, but, even here, the heat waves are not comparable with those of the northern hemisphere. Habitation is sparse in Central Australia, but the meteorological data collected at the various towns prove that the summer conditions existing there are not as trying as the countries of the northern hemisphere. I have, unfortunately, not

been able to obtain information as to the prevalence or otherwise of heatstroke in those inland districts of Australia, but it is safe to assume that true heatstroke is neither frequent nor severe.

The trying conditions prevalent in Asia and its neighbouring countries are due almost entirely to the succession of heat waves occurring throughout the summer months. In Basra, Mesopotamia, during the summer of 1917, there were a succession of heat-waves and during the most severe wave the temperatures ranged from 46·1° to 50° C. (115° to 122° F.) for twelve days. Conditions such as these are never, or at least, very seldom experienced in Australia and then only in the extreme portions of the continent. In Sydney, if the thermometer is within the vicinity of 37·8° C. (100° F.) the temperature is considered to be very trying.

The following tables should now be consulted. They show the average monthly and annual temperatures for towns in northern Australia compared with the average monthly temperatures in Mesopotamia and India.

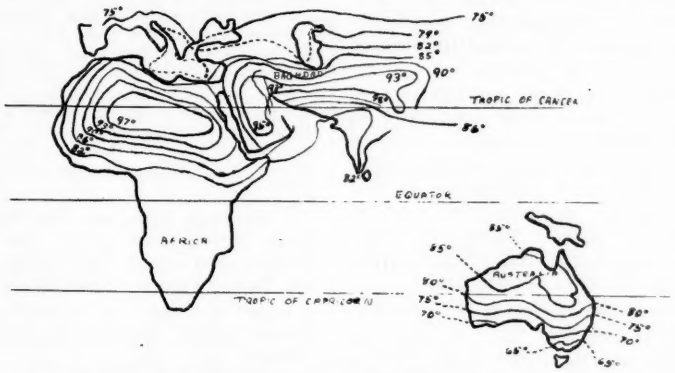

Chart showing mid-summer isotherms over northern Africa, Persia and Mesopotamia as compared with those over Australia. The readings are expressed in degrees Fahrenheit. (Weather Bureau, Sydney.)

TABLE I.

Summer Meteorological Summary for Sydney. Average Monthly Temperatures.

December	70·1° F.
January	71·6° F.
February	71·3° F.
March	69·3° F.

A comparison of these tables gives us a good idea of the average temperatures of northern Australia as against the average temperatures of Mesopotamia. It may be stated briefly that the average monthly temperatures in northern Australia are comparable with the minimum monthly temperatures in Mesopotamia. In New South Wales, the average temperatures are considerably less than those of Queensland and the Northern Territory. There is, therefore, only one conclusion to draw from these comparisons regarding the prevalence of heatstroke: If heatstroke is prevalent in Mesopotamia on account of the high atmospheric temperatures of that country, then the inhabitants of northern Australia would be less likely to suffer from the effects of heat owing to the lower average temperatures. Now, the average monthly temperatures throughout New South Wales are very considerably less than those of northern Australia. Therefore, the inhabitants of New South Wales are less likely to be stricken with heatstroke than are the inhabitants of northern Australia.

From the meteorological records at the Weather Bureau, Sydney, it was learned that: (*a*) The New South Wales climate responds more readily to the influence of the seasons than do the northern States. (*b*) The State of New South Wales is not subject to

TABLE II.

Monthly Meteorological Summary for Towns in Northern Australia.

Place.	October.	November.	December.	January.	February.	March.	Average for Year.	Number of Years.
Broome, Western Australia	80·9° F.	84·5° F.	86·0° F.	85·8° F.	85·3° F.	83·2° F.	79·9° F.	14
Darwin, Northern Territory	85·5° F.	85·7° F.	85·3° F.	84·0° F.	83·4° F.	84·1° F.	82·7° F.	29
Daly Waters, Northern Territory	86·1° F.	88·3° F.	88·1° F.	86·8° F.	85·5° F.	83·8° F.	80·4° F.	25
Cloncurry, Queensland	82·5° F.	88·0° F.	76·9° F.	86·9° F.	84·8° F.	83·0° F.	76·9° F.	11
Charleville, Queensland	71·6° F.	77·4° F.	80·2° F.	82·8° F.	80·2° F.	75·8° F.	68·4° F.	9
Innisfail, Queensland	72·9° F.	74·7° F.	77·7° F.	78·9° F.	78·9° F.	77·6° F.	73·0° F.	6
Brisbane, Queensland	69·8° F.	73·3° F.	76·5° F.	77·1° F.	76·4° F.	74·3° F.	68·8° F.	25

TABLE III.

Summer Meteorological Summary—Basra.

Observation.	June.	July.	August.	September.
Average Maximum Temperature	100·6° F.	107·2° F.	105·9° F.	103·4° F.
Highest Maximum Temperature	110° F.	116° F.	113·6° F.	110·1° F.
Lowest Maximum Temperature	90·8° F.	99·9° F.	92·9° F.	100·7° F.
Average Minimum Temperature	75·6° F.	78·1° F.	76·4° F.	72·9° F.
Highest Minimum Temperature	82·8° F.	87·6° F.	85° F.	77·6° F.
Lowest Minimum Temperature	68·8° F.	72·6° F.	68·1° F.	68·6° F.
Average Daily Wind Movement	272·6 miles	200·6 miles	245 miles	155 miles
Total Rainfall	Nil	Nil	Nil	Nil
Greatest Daily Rainfall Amount	Nil	Nil	Nil	Nil

heat waves during the summer months to the same extent as are the northern States. The heat waves in New South Wales are considerably more infrequent and much shorter in duration than those of Queensland and the Northern Territory. Again, the heat waves which occur in the northern States of Australia are not so severe nor so persistent as in Mesopotamia, nor are they nearly so frequent during the summer months.

This information alone helps us very largely to prove that the true condition of heatstroke is not prevalent among the inhabitants of New South Wales, for the prevailing climatic conditions necessary to produce true heatstroke in human beings is a persistently high atmospheric temperature, usually in the form of prolonged heat waves—a condition which is extremely rare in New South Wales.

The average summer weather conditions are certainly more tropical in Queensland (especially in the extreme northern portion of the State) than in New South Wales. Conditions are, therefore, more favourable to the production of heatstroke in susceptible subjects than under the climatic conditions prevalent in New South Wales. Much the same conditions occur in the Northern Territory and north-western Australia as in northern Queensland.

Certainly, heat waves do occur during the summer months in New South Wales, but they do not last for long and the summer temperature is subject to very considerable fluctuations and whatever trying conditions are imposed upon the State, they are quickly relieved by southerly changes.

Heatstroke in New South Wales.

As already explained, the average summer weather conditions prevalent in New South Wales are not those which would naturally cause heatstroke. This is confirmed when the meteorological data of New South Wales are studied and compared with the data obtained from more tropical countries. The data show that the average summer weather temperatures for Sydney are between 70° and 80° F.; for Queensland and the Northern Territory towns, they range from 70° to 90° F., and for Basra, Mesopotamia, the temperatures are in the vicinity of 106° F.

In order to ascertain whether any definite cases of heatstroke had been treated in the hospitals in Sydney, I visited the Royal Prince Alfred Hospital and the Sydney Hospital, where I was granted permission to study the records. I found that at the Royal Prince Alfred Hospital only twenty-three people had been treated for conditions due to the effects of heat since the year 1910, whilst at the Sydney Hospital only eleven people had been treated since the year 1922.

An exhaustive study of these records showed that there was not one case of definite heatstroke amongst them, all but one being nothing more than heat-exhaustion, whilst the only one exceptional case appears to have been correctly diagnosed as heat-cramps.

A few typical cases were selected from the records and the information obtained concerning each case is as follows:

CASE I. The patient was a male, aged twenty-three, and was admitted to hospital on February 15, 1926. He was a crane-driver. He gave a history of having walked out of a lime-kiln into the sun the previous day and collapsed very suddenly. He became unconscious in the ward. His history of past illnesses was that his left ear used to discharge and stop periodically ever since the drum was broken twelve months ago. There were no other illnesses.

The patient was very shocked on admission, the limbs were cold and the pulse was fairly soft. His temperature was 37·6° C. (99·8° F.). He was discharged from hospital quite well on February 16, 1926.

CASE II. The patient was a male, aged forty-two. He was admitted to hospital on January 17, 1929. He had been working hard in the sun for three days, carrying wheat bags. He complained of having suffered from headaches for three days. He was said to have taken two fits and he collapsed at work. He did not bite his tongue or lose control of his bladder. He lost consciousness. He suffered from a fractured skull five years ago and was in hospital for eight weeks. He had pneumonia six years ago. He is now a heavy drinker.

On admission he was suffering from alcoholism. His speech was thick and his tongue protruded to the right (this was said to be due to the fractured skull). His abdomen was soft. His temperature was 38·3°C. (101° F.). He was discharged on January 21, 1929. The diagnosis was pyrexia due to heat exhaustion.

These two cases are representative of the average illness brought about by the effects of heat in the Sydney district, as far as the Sydney Hospital and the Royal Prince Alfred Hospital are concerned. It is quite obvious that neither of the conditions mentioned could possibly be true hyperpyrexial heatstroke.

In Case I, the duration of the illness was very short, the patient being in hospital for only two days and his temperature being only 37·6° C. (99·8° F.). The second case described is somewhat different in severity, although it falls far short of hyperpyrexial heatstroke. Although the patient was kept in hospital for five days, his temperature was only 38·3° C. (101° F.) and his condition was diagnosed as "pyrexia due to heat-exhaustion". In this case it is important to take into consideration his history of past illnesses and the fact that he was alcoholic when brought to the hospital. It is reasonable to consider his past illnesses, especially the fractured skull, from which he had not completely recovered, and his present alcoholic condition as contributory factors to the condition diagnosed.

There is a record of one case, however, at the Royal Prince Alfred Hospital which, I think, is worthy of mention. There is very little doubt that the condition was correctly diagnosed as one of heat cramps and the notes on record at the hospital are as follows:

The patient had a sudden attack of cramps in the limbs, accompanied by vomiting. He takes a glass of beer each day. He was very hot when working and he felt a sudden attack of cramp in the stomach, arms and legs and then he vomited. He lay down and felt very faint. He had had no previous attacks. The pain was not localized to any place, but was generalized in the abdomen. It was worst in the calves of the legs. He vomited five times before admission to hospital. He lay doubled up in bed. His skin was cold with free sweating. His muscles became violently contracted during the cramps and he suffered great pain. His temperature was 37·8° C. (100° F.). He was discharged on February 5, 1931.

Concerning this case, it would be advisable to quote from the *The Lancet*, November 3, 1928, page 935:

During or after exertion, cramps commence generally in the calves, spreading to the other limbs and abdomen, tem-

perature is raised little if at all, albuminuria is always found . . . . Casamian ascribes the cramps, which he regards as a tetany, to diminution by sweating of the free Ca-ions in the blood. Guanidine is formed more freely from creatine in the increased metabolism due to the high surrounding temperature and in Noël Paton's view it was the Ca-ions which protect the nerve-cells against its attack. Casamian therefore suggests the administration of calcium chloride in a dose of 60 grains or more.

Before concluding, I should like to describe a theory, which was suggested by Mr. W. M. Doherty, F.C.S., F.I.C., late Government Analyst, New South Wales, and which gives a possible clue as to the primary cause of hyperpyrexial heatstroke.

It is without doubt that true hyperpyrexial heatstroke is brought about by a heated atmosphere extending over a long period and is always preceded by prolonged and profuse sweating. It would be reasonable to assume that as a result of the excessive sweating, the sweat glands become exhausted and cease to function, thus depriving the body of its natural means of losing heat.

Mr. Doherty's opinion is that if a person perspires very considerably, there would naturally be a serious loss of sodium chloride, one of the constituents of sweat, to the body. Now, sodium chloride is a very necessary physiological constituent of the living body and any diminution of its natural quantity in the body may be very prone to cause trouble; in fact, the deficiency of sodium chloride in the body, brought about by profuse sweating, may be the direct cause of the exhaustion of the sweat glands and therefore the primary cause of hyperpyrexial heatstroke.

In support of this theory it may be pointed out that in tropical countries, salt is consumed very largely by the natives. One of the most outstanding examples of this practice is to be found in the Pigmy race in Central Africa. Here, the atmospheric temperature is very high and the Pigmies consume large quantities of salt per day. It is very probable that the inclusion of large quantities of sodium chloride in the daily diet of the native races of tropical countries is Nature's way of maintaining a balance to account for the sodium chloride lost on account of the profuse sweating.

This is purely theoretical and has not been substantiated by any scientific research, yet there is a possibility that the deficiency of sodium chloride may be the real cause of hyperpyrexial heatstroke if sufficient sodium chloride is not taken with the food to make up the deficiency. The question is, I think, worthy of consideration and research.

Conclusions.

The summer weather conditions existing in New South Wales are not, as a rule, favourable to the production of heatstroke, but under these climatic conditions, both heat-exhaustion and heat-cramps would be frequent. The climatic conditions existing during the summer months in northern Queensland, the Northern Territory and the northern portion of Western Australia are such as would cause a severe type of hyperpyrexial heatstroke, although, in intensity, the disease in Australia could not be compared with that which is observed in Asiatic regions.

Acknowledgements.

Before closing, I would like to convey my sincere thanks to Mr. D. J. Mares and Mr. H. E. Camm, both of the Weather Bureau, Sydney, for supplying me with valuable data concerning the average weather conditions existing, not only in Australia, but in other countries.

Reports of Cases.

FIBROMYOMA OF THE UTERUS CAUSING INTRAPERITONEAL HÆMORRHAGE.[1]

By IAN HAMILTON, F.R.C.S. (England),
Adelaide.

THE patient, unmarried, aged thirty-five, was quite well until the evening of October 29, 1931, when she went to bed with some slight occasional pains in the lower part of the abdomen. She woke feeling well the following morning, got up and went for a bath. On the way there she felt a most acute pain in the lower part of the abdomen and fainted; she was put to bed, rapidly regained consciousness, but had the most excruciating pain. This pain was practically constant and had not eased off since its commencement three-quarters of an hour before examination. There was no other point in the history. The functions were all normal; menstruation was regular, its duration was five days, and there was no excess. The last period had occurred two weeks previously. Appendicitis was treated by appendicectomy eleven years ago.

On examination the patient's temperature was 37·2° C. (99° F.), the pulse rate was 100, and the patient was in obvious distress; she was sweating.

The abdomen moved on respiration; there was slight distension below the umbilicus, but no tenderness above the umbilicus. Below this there was great tenderness, both in the hypogastrium and in both iliac fossæ, with definite resistance to palpation; the muscles were guarded. No mass or lump was to be felt, and there was no shifting dulness. On rectal examination the pouch of Douglas was found to be extremely tender, soft and bulging into the rectum. On vaginal examination a fibromyoma could be felt on top of the uterus.

At operation a mid-line subumbilical incision was made. On opening the abdomen, blood and clots appeared. At the fundus of the uterus there was a pedunculated subserous fibroid about the size of a tennis ball, with a cystic area at the upper end, whence the bleeding had obviously occurred. The fibroid was attached in front to the parietal peritoneum at the apex of the bladder, to the great omentum behind, and to the colonic fat (*appendices epiploicæ*). The omentum presented a most peculiar purple appearance, large veins running in it. There was about half a pint of blood in the peritoneal cavity.

The tumour was freed from its attachments and adhesions and removed, the peritoneal toilet was performed and the abdomen closed. Convalescence was uneventful and the patient was up in seventeen days and home in twenty-two.

Comment.

Apart from injury, intraperitoneal hæmorrhage is uncommon. The most frequent and dangerous cause is ruptured ectopic gestation. After this, rare causes must be considered, for example, spontaneous rupture of the spleen, of which twelve cases have been reported (Hamilton Bailey[2]), rupture of hollow viscera. Bland Sutton[1] says that intraperitoneal hæmorrhage from rupture or laceration of veins on the surface of a fibroid is an extremely rare accident. During the last four years only two cases

[1] Read at a meeting of the South Australian Branch of the British Medical Association on November 26, 1931.

have been reported, according to the *Index Medicus*. The literature of these latter is not available in Adelaide.

References.

(1) Bland Sutton: "Tumours, Innocent and Malignant," 1922, page 197.
(2) Hamilton Bailey: *The British Journal of Surgery*, 1930, Volume XVII, page 417.

Reviews.

HEREDITY.

THE third German edition of "Human Heredity", by Professor Erwin Baur, Professor Eugen Fischer and Professor Fritz Lenz, has just appeared in an English dress.[1] The book, which is a veritable mine of information, and, at the same time, easy to read, was originally written to provide a scientific foundation for a sequel to be called "Human Selection and Racial Hygiene".

Section one, by Dr. Baur, gives a sketch of the general theory of variation and heredity. This is in general quite clear, but the section on the coupling of factors is so concise as to be obscure and would be greatly clarified by the inclusion of an illustration on the lines of Figure XX. In this section, as throughout the book, Mendelian heredity is alone considered, and Lamarckism (the doctrine of the inheritance of acquired characters) is utterly rejected. "Educability . . . is inheritable. On the other hand . . . the offspring of cultured families are often enough . . . quite unable to assimilate the elements of a higher culture. Such facts tell strongly against the [Lamarckian] view . . . but are perfectly comprehensible in the light of the basic Mendelian law."

Section two, by Dr. Fischer, deals with racial differences in mankind and contains an admirable survey of anthropology.

Section three, by Dr. Lenz, is devoted to morbific heredity factors and should be of the greatest use to medical men. For, as the author states in dealing with the inheritability of a susceptibility to tuberculosis, "at present . . . most medical practitioners . . . deny the existence of such a susceptibility. The reason for this scepticism is that, whereas most doctors have clear ideas concerning infection, they have not as yet any such clear ideas concerning heredity." This section, which is profusely illustrated by most convincing family trees, explains the mode of inheritance of a long list of diseases, many of them quite common. Doctors are frequently asked by anxious patients whether a disease suffered by their parents or themselves is likely to appear in themselves or their children. Reference to this section will show whether a particular disease is dominant or recessive in inheritance and enable really valuable advice to be given. Unfortunately, this reference is not made easy by the amazing index to the work. This is chiefly composed of useless references to papers quoted in the text, and the actual subjects discussed are listed in a most inadequate manner. The seeker gets a rough idea from the table of contents as to where the information desired is likely to be, and then has to hunt about till he finds it. Such an index cannot be too strongly condemned.

Dr. Lenz maintains that alcoholism can directly injure the germ plasm and that such injuries can continue to be transmitted. He quotes Stockard's American experiments in support of his view, evidently being unaware of the recently concluded British experiments, which have completely disproved Stockard's conclusions. Moreover, it is at least doubtful whether the germ plasm can be similarly injured by the other agents he mentions, for example, mercury, lead, iodine or, indeed, by anything but radium and X rays.

Section four, by Dr. Lenz, describes the methods to be used in work on heredity. These demand a considerable knowledge of mathematics.

Section five deals with the inheritance of intellectual gifts, and the book concludes with a brilliant analysis of the psychological differences between the leading races of mankind. Unless eugenic measures are adopted, the authors are frankly pessimistic about the fate of Europe. "There is much to indicate that the future of the earth belongs to the Mongols, for the Europeans persistently misapply their military technique to mutual destruction and encourage the dying out of their best racial elements. The Mongols seem to be safeguarded against both these evils by their hereditary temperaments." As the authors' sequel describes the eugenic measures recommended, its appearance in English will be eagerly awaited. Eden and Cedar Paul's translation, while generally clear, is marred by occasional crudeness of expression and by solecisms such as "tendentious" for "biased". The book contains a number of misprints, some of them confusing.

[1] "Human Heredity", by E. Baur, E. Fischer and F. Lenz, translated by E. and C. Paul; 1931. London: George Allan and Unwin. Royal 8vo., pp. 734, with 172 illustrations in the text and 9 plates. Price: 30s. net.

INJURIES AND THEIR TREATMENT.

THE author of "Traumatic Therapy" states that one of his aims was conciseness, and this has been achieved at the expense of complete description of principles underlying methods of treatment.[1] A post-graduate class should be given an exposition of the theory underlying a method, even though it may be necessary to reduce the space given to practical details, with which, after all, they should be familiar. When considered from this standpoint, the book fails to fill any real want in the training of a post-graduate class. We find ourselves at times in conflict with the views of the author, for example, when he advocates guarded passive movements in the early treatment of fractures, and also when he uses the lack of reaction after pounding fractured bones as a criterion for allowing the patient to resume use of the limb.

Many graduates would find themselves at variance with the author when he states that we are rarely able to do more for a fractured metatarsal than we can do for a contusion sprain; and when he "refuses to believe that the germs of our generation can be pestered to death by some gay colours", he apparently has not become conversant with the epoch-making work of the Middlesex school on the relative value of the aniline dyes and other antiseptics. Nor do we feel that it is wise to rely on the "liberal but gentle use of soap and water to adequately sterilize accidental wounds". In this connexion also the author makes his position very clear when he states: "If we must use an antiseptic, and I suppose we must, let us stick to iodine or permanganate." Again, in dealing with intracapsular fractures of the neck of the femur, he expresses the opinion that they "repair by a sort of spontaneous reconstruction operation in which the fracture line fades out and the trochanteric line blends and fuses with the neck of the femur and that the desiccated bone literally stews in its own juice". A more clear and definite exposition of the physiology and pathology of bone repair would be of much greater value to the class for which this book is designed.

The term "arthrochondrosynovitis", frequently used in this work, is clumsy and certainly expresses no more than is implied in the terms at present in use. The outstanding feature of this book seems to be a desire on the part of the author to avoid the use of accepted pathological terms and to popularize the conception of such conditions in terms of motor cars and other material articles in use by the lay public. An effort to read the text in this work becomes fatiguing, owing to the free use of abbreviations and the lack of adequate justification for many statements made.

The illustrations are good and would serve as a useful guide to junior students; but junior students should read the text with great circumspection, if at all. Post-graduate students in this country will find nothing in the book to warrant adding it to their libraries.

[1] "Traumatotherapy. The Treatment of the Injured", by J. J. Moorhead, B.Sc., M.D., F.A.C.S. (D.S.M.); 1931. Philadelphia: W. B. Saunders Company; Melbourne: James Little. Royal 8vo., pp. 574, with 625 illustrations. Price: 42s. net.

The Medical Journal of Australia

SATURDAY, FEBRUARY 13, 1932.

All articles submitted for publication in this journal should be typed with double or treble spacing. Carbon copies should not be sent. Authors are requested to avoid the use of abbreviations and not to underline either words or phrases.

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COMPARATIVE MEDICINE.

No one can deny the unfortunate tendency of medical practitioners to pay attention to the manifestations of disease in individual patients rather than to study disease in its protean forms—the tendency to spend their professional lives wearing the blinkers of consulting room equipment. Right through the ages the men who have done most for humanity, the men who have left mankind their debtors, have had wide vision and deep understanding. That depth of understanding is dependent on breadth of vision is as true in medicine as in any other of the activities of man. In the early stages of the medical curriculum students are called upon to follow the development and growth of animals and to learn something of their adult structure. The reason for this is obvious, though it may be, and sometimes is, forgotten. The study of comparative anatomy has an interest and a fascination of its own; but it has more. Without its aid certain of the structures in the human body appear purposeless and some of the activities of the body lose their significance. This has been brought home to medical practitioners in Australia time and time again by Professor Sir Colin MacKenzie, of the Institute of Anatomy, Canberra, in his papers and addresses.

A knowledge of human anatomy is essential to the study of disease in man. While all physicians, surgeons and general practitioners recognize this, they lose sight of the importance of comparative anatomy and of its corollary, comparative medicine. Medical graduates who are fortunate enough to spend a year or two working in a research laboratory, conduct investigations on animals and endeavour to apply them to human medicine. They soon learn that the results of animal experimentation are not directly applicable to man, but they also learn that the study of disease in animals will often throw a flood of light on obscure problems in human disease. The outlook of medical practitioners should include comparative medicine.

Graduates in medicine are not the only persons qualified to investigate the problems of comparative medicine. Individual investigation is valuable and necessary, but collaboration is needed. Medical practitioners are apt to disregard, or at least are often ignorant of, the work that is done by persons who are not graduates in medicine; perhaps of all professional people they are the most cliquish. Graduates in veterinary science have investigated problems which are bound up with human medicine. In Australia alone work of the highest order has been carried out by veterinarians in such subjects as hydatid disease, actinomycosis and liver infestation. There is far too little collaboration of medical practitioner with those who practise animal medicine. The graduate in veterinary science is no longer a mere "horse doctor", any more than a physician is a phlebotomist or a surgeon a barber's assistant. Veterinarians cover a field as large as, if not larger than, that of the medical practitioner—they are concerned with the discovery of disease, the cure of disease and the prevention of disease—and by preventing disease in animals they often prevent disease in human beings. Since they have not to study the whims and fancies of their patients, since they are not expected to yield to the importunate demands of their patients' stupid relatives, they are probably more scientifically minded than the practitioners of human medicine. There is no

doubt that scientific intercourse between practitioners of animal and human medicine would be a stimulus to both; it would also prevent a certain amount of overlapping.

The end of the matter is that the time has arrived when a Section of Comparative Medicine should be created in the Australasian Medical Congress (British Medical Association). If a precedent for this step be needed, the Section of Comparative Medicine of the Royal Society of Medicine may be quoted; but a precedent should not be necessary. There are many medical graduates who could make valuable contributions to such a section. As far as collaboration with veterinarians is concerned, requirements might be met, at least for the present, by the appointment of honorary members of Congress. Honorary members, not necessarily medical practitioners, may be nominated by the Executive Committee of Congress for appointment by the Federal Committee. Later on some other provision would have to be made. In the Branches of the British Medical Association in the several States a meeting might be devoted at regular intervals to some aspect of comparative medicine, and members of veterinary organizations should be invited to take part either in reading papers or in discussion. Further, when a follower of the veterinary profession has carried out work which has a bearing on human medicine, or which may point the way to investigation of human disease, he should be invited to expound his work to medical practitioners.

Current Comment.

POLIOMYELITIS.

IT is now more or less generally believed that the disease known as poliomyelitis or infantile paralysis does not always cause paralysis. This, of course, does not prove that the spinal cord is not always involved in the pathological process; but it does suggest that when there is no paralysis, the patient's immunity overcomes the infection before destruction of the anterior horn cells occurs. Some observers are of the opinion that the majority of cases of poliomyelitis are of the so-called abortive type, and that the cord often appears to be unaffected. If the cord were entirely unaffected the term "poliomyelitis" would be inapplicable. What, then, is the pathology of the disease, and along what route is infection introduced? Experimental work has been governed largely by the assumption that poliomyelitis is essentially a disease of the central nervous system. Fairbrother and Hurst have done much work in the pathology of the disease, and their findings have been discussed from time to time in this journal. It will also be remembered that Webster, of Melbourne, has published important pathological observations in these pages.

Montrose T. Burrows believes that poliomyelitis is primarily a disease of the lymphatic system, and he suggests that the name be altered to "acute lymphatic hyperplasia".[1] He bases his conclusions on the results of his clinical observations and *post mortem* examinations in a great number of cases.

Some observers have stated that during an epidemic there are no nervous symptoms in 25% of cases; others have declared that the proportion is as high as 65% or 75%; Burrows remarks that probably even these figures are too low. Failure to recognize that the disease is usually mild has caused investigators to pay too much attention to the rare cases in which paralysis occurs, and not sufficient to the "hundreds of mild cases that may be wholly responsible for the spread of the infection". In the opinion of Burrows there is still a tendency to regard poliomyelitis as a disease primarily of the central nervous system, and investigators are too apt to draw deductions from the study of the effects produced by the introduction of the virus into the brain of a laboratory animal. Burrows holds that the clinical phenomena provide a means of studying more accurately the route of the infection and the spread of the disease.

Pathologically, a feature of the disease is a hyperplasia of lymphoid tissue throughout the body. This is most pronounced in the solitary follicles of the intestinal tract, Peyer's patches, and mesenteric lymph glands. In the central nervous system the perivascular lymph spaces become distended and the cells lining them proliferate. The lining membranes of the lymph spaces may be ruptured by the pressure of fluid from within; œdema may be so great as to cause death if the respiratory centre is involved. In other instances there is a greater proliferation of endothelial cells, the glia cells also proliferate, and areas of necrosis occur in the nerve tissue. In yet other instances there is no evidence of excessive fluid, and the proliferating endothelial cells migrate into the surrounding tissues; the glia cells proliferate, and fatty changes appear. Burrows stresses the point that in all cases the nerve tissue is involved secondarily to the lymph spaces.

It is generally held that the virus of poliomyelitis gains entry to the body by way of the naso-pharynx. Burrows does not agree with this. Though the tonsils are affected in common with other lymphoid tissue, there are seldom any pronounced symptoms referable to the nose and throat. In the vast majority of instances the onset of the disease is marked clinically by a gastro-intestinal disturbance. A consideration of this, coupled with the patho-

[1] *Archives of Internal Medicine*, July, 1931.

logical appearances, leads Burrows to the view that the virus is introduced by way of the alimentary tract. As a further argument he remarks that the nasal secretions of healthy monkeys have been found to neutralize the virus.

Burrows considers the present methods of quarantine totally inadequate, for the vast majority of infected persons are allowed to remain at large. He believes that poliomyelitis is probably always present in the community as a sporadic disease and that to protect any person against it would necessitate complete isolation for life.

During an epidemic of poliomyelitis in 1916, Park and Burrows made a study of an outbreak in an apartment house. They found that the child who first became infected with recognizable poliomyelitis, infected every child who came in contact with him; these children in turn infected all who came in contact with them; but in only a few instances was there evidence of involvement of the central nervous system. In another small epidemic twelve children became ill, and only one of them became paralysed. The difficulties in the way of clinical diagnosis are great unless pronounced nervous symptoms are present. In the existing state of knowledge an adequate quarantine system is impracticable.

Burrows believes that paralysis should be regarded as a complication of an acute infectious disease and should occupy a position analogous to that of post-scarlatinal nephritis. There scarcely seems to be sufficient justification for this view. Scarlatinal nephritis is due to the action of a toxin, whereas paralysis is probably due to the direct effects of a virus that has a special affinity for nervous tissue. The involvement of the central nervous system should be regarded as an extension of an acute infective process rather than as a complication.

During epidemics of infantile paralysis it is unusual for a number of cases to occur in one household; in fact, it is a feature of the disease that it occurs here and there in an uneven distribution in any infected area. Furthermore, infected children admitted to the general wards of a hospital do not appear to transmit the disease to others. Some observers have even remarked that there is no evidence of the infectivity of a person suffering from infantile paralysis. Burrows provides a logical explanation for this apparent anomaly; no doubt a similar explanation has occurred to other thoughtful physicians. He does not make out a very good case for his view concerning the route of the infection. His own experience of the very great infectivity of the disease should suggest that the infection is acquired by inhalation rather than by swallowing; the lymphoid tissue of the intestinal tract is probably involved only in common with the lymphoid tissue of the body generally.

Burrows's views concerning the nature of the disease and its incidence cannot be accepted. It must be remembered that lymphoid tissue is involved in other acute infectious diseases; doubtless the lymphoid hyperplasia of poliomyelitis is merely an incidental feature of a generalized infection. Much remains to be discovered about the infective agent in poliomyelitis, and it would be absurd in the present state of knowledge to alter the name of the disease. If Burrows has done nothing else, he has shown that we should not be satisfied with knowledge as it is, and that attention must be directed to the so-called abortive forms; he has also emphasized the need for epidemiological studies. Such investigations cannot be carried out in hospital wards; they must be made in the field, preferably by general practitioners.

REGENERATION OF THE EPIDERMIS.

OBSERVATIONS which may prove of clinical value have recently been made by F. A. McJunkin and T. Matsui on the effect of homologous macerated skin on the regeneration of epidermis.[1] They carried out observations on young white rats. Incisions were made into the necks of the rats, two incisions in each instance. One incision was filled with homologous macerated tissue and dressed with sterile gauze, and the second, control, incision was dressed with sterile gauze alone. Two types of macerated tissue were used. One consisted of macerated epidermis obtained from the tail of the animal, and the other of connective tissue from the tail tendons. The wounds were excised later on, together with a surrounding area of tissue, fixed in formaldehyde, embedded in paraffin and cut into serial sections. It was found that the length and thickness of the regenerated epithelium in the wounds filled with macerated epithelium from the tail were much greater than in the control wounds. In order to prove that a mere mechanical filling of the wound was not responsible for the result, wounds were filled with a paraffin-petrolatum mixture of a consistency like that of the macerated tissues. The wounds under these conditions did not manifest such extensive epithelial regeneration as when they were filled with macerated epithelium. When the wounds were filled with macerated connective tissue (from the tail tendons), growth of epithelium was retarded. McJunkin and Matsui point out that this finding confirms observations made by Carrel on connective tissue. Fœtal macerated epidermis was found to have the same effect as that from adult animals.

McJunkin and Matsui conclude that the stimulant action of the macerated epidermis is local, since the control wounds only two centimetres distant did not show it. The increase is not mechanical and due to the protective influence of an inert substance. They think it possible that from the macerated epidermis undergoing local disintegration is liberated "a formative stimulus which is specific for epidermal cells". It must be noted in this connexion that fœtal skin containing immature connective tissue stimulated the formation of angiofibroblastic tissue and produced abundant granulation tissue. The conclusions of these two workers are certainly reasonable.

[1] *Archives of Pathology*, November, 1931.

Abstracts from Current Medical Literature.

THERAPEUTICS.

Thiocyanate Therapy in Hypertension.

W. C. EGLOFF, L. H. HOYT AND J. P. O'HARE (*The Journal of the American Medical Association*, June 6, 1931), in discussing thiocyanate therapy in hypertension, state that their results with sodium thiocyanate have been unfavourable. They made their observations upon a series of patients seen in the renal clinic of the Peter Bent Brigham Hospital. They stress the point that the normal variations in blood pressure in these patients was known and they were thus able to avoid the too frequent error of attributing to the drug the moderate drops in pressure which more rightly should be assigned to the normal variations. Their series consisted of twenty-five ambulatory patients, twelve of whom had primary hypertension, eleven hypertension and hypertensive heart disease, and two hypertension with moderate renal involvement. Their method was to administer thiocyanate in diminishing doses for three weeks. They used the potassium salt for the first three patients, but discontinued it because of the distressing nausea and weakness that it caused, and used the sodium salt in the remaining twenty-two instances. These patients were given an 8% aqueous solution of sodium thiocyanate in the following doses: first week, 1·0 gramme daily; second week, 0·6 gramme daily; third week, 0·3 gramme daily. In only two of the patients under observation was the blood pressure lowered twenty millimetres of mercury below the average minimal systolic and diastolic pressure levels observed during the preceding year. Seven of the patients showed a moderate rise, presumably due to the disagreeable effects of the thiocyanate. The effect of the therapy in relieving symptoms such as headache, dizziness and nervousness, was equally disappointing, the only two patients relieved being those who showed a fall in blood pressure. Every patient in the series complained of various disagreeable symptoms, such as nausea, vomiting, diarrhœa, increased nervousness and apprehension. In one case disorientation as to time and place occurred. The authors conclude by stating that their results were so nearly uniform that they should at least serve as a warning against too great an enthusiasm for this drug.

Treatment of Pernicious Anæmia.

E. SCHULTZ (*Deutsche Medizinische Wochenschrift*, April 3, 1931) has treated six patients with pernicious anæmia of moderate degree and one with severe secondary anæmia and achylia with stomach extract over periods varying from three to nine months. He considers that this treatment is of equal value to that with liver extract. The first two weeks of treatment are the most critical, and he noted as complications: lowering of the blood count, eosinophilia, constipation and flushing. Similar occurrences were noted when liver treatment was begun. The treatment should be continued for three to four weeks, unless no improvement be noted. A sudden change from stomach to liver extract should never be made, as it is often associated with unpleasant symptoms. When the change is made gradually, the patient becomes accustomed to it, and by thus alternating the extracts a more rapid improvement is noted than when one medicament alone is employed.

Neurosyphilis.

J. P. STEEL (*The Practitioner*, October, 1931) describes the benefits of treatment by means of "Tryparsamide", the sodium salt of N-phenylglycineamide-p-arsonic acid in *tabes dorsalis*, general paralysis of the insane and *paralysis agitans*. In the early stages of *tabes dorsalis*, considerable relief of symptoms was noted, especially sphincter trouble. In general paralysis of the insane also it has a beneficial effect, and in some cases has afforded relief from convulsions; it is most useful as an adjunct to malaria treatment. In *paralysis agitans*, "Tryparsamide" reduces tremor and has a pronounced tonic effect. The drug is given intravenously as a rule, in a dose of 1·5 to 3·0 grammes per week, until from 24 to 30 grammes have been given. A two months' rest should ensue before further injections. Administration of potassium iodide is advised in the interval. Contraindications to the use of "Tryparsamide" are ocular disorders, tendency to jaundice and fever.

Iron in Achlorhydric Anæmia.

L. J. WITTS (*The Practitioner*, October, 1931) describes the features of simple achlorhydric anæmia and allied forms of anæmia. Chronic secondary anæmia not due to hæmorrhage, infection, toxæmia or new growth, occurs frequently in women aged between 20 and 50 years; that is, during the reproductive period. The name "chronic microcytic anæmia" has been given to this condition on account of the diminished hæmoglobin content and low colour index. Indigestion, constipation, diarrhœa or bilious attacks frequently precede and accompany this anæmia; achlorhydria preceded it in 82% of 120 cases. The spleen is palpable in one-third of the cases; glossitis, ulceration of the mouth and pharyngitis occur frequently. Dysphagia is common. Absorption of iron is diminished in achlorhydria. The best treatment is with freshly prepared Blaud's pills in powdered form. A dose of 0·6 gramme (ten grains) three times a day usually produces an adequate response. It is suggested that lack of absorption of iron and copper due to deficient hydrochloric acid in the gastric juice may cause chronic microcytic anæmia, especially in women who have undergone the strain of reproduction. Absence of both hydrochloric acid and ferments (achylia) gives rise to pernicious anæmia. Chronic achlorhydric anæmia rarely occurs in men in later life. Defects in food and in the gastro-intestinal tract give rise to these two types of anæmia, and also to the nutritional anæmia of infancy and those due to lack of vitamin *B* or vitamin *C*.

Chronic Arthritis.

F. COSTE, J. FORESTIER AND J. LACAPÈRE (*La Presse Médicale*, May 2, 1931) discuss the treatment of chronic arthritis. Foci of infection in teeth, gums, tonsils, sinuses and urinary passages, should be vigorously treated. The gastro-intestinal tract should be carefully studied and adequately treated if abnormal. A substantial and varied diet is generally indicated. In gonorrhœal arthritis, vaccines and sera are beneficial in proportion to the reaction produced; in this condition also protein shock therapy has a definite value. Some chronic arthritides benefit by the use of a combination of iodine and hexamine. Sulphur preparations have a limited use. Certain salts of gold, such as "Allochrysine", in small doses for a long period, do good in some cases. "Allochrysine" is an auro-thiopropanol, and it is a question whether the gold or the sulphur is the beneficial substance. "Solganol" is a similar German preparation. Thyreoid extract seems to do good at times by stimulating metabolism. The usual local treatment may be extended by the use of X rays in some cases, especially in gonococcal arthritis.

Pernicious Anæmia.

W. BROCKBANK (*The Practitioner*, October, 1931) discusses the treatment of pernicious anæmia. Treatment with arsenic has gone out of fashion; the liver treatment is a great advance, but, owing to indigestion, flatulence and diarrhœa, it is necessary frequently to administer a mixture of three parts glycerine of pepsin and one part of dilute hydrochloric acid. Eight cubic centimetres (two fluid drachms) of the mixture are added to 240 cubic centimetres (eight fluid ounces) of water, flavoured with orange juice; this should be sipped throughout each meal. Desiccated hog's stomach has more recently come into vogue, and the response to this treatment has been most satisfactory. Early neurological symptoms improved, and gastro-intestinal symptoms were absent. At first a daily dose of 30 grammes (one ounce) is required, but this can be diminished later. Blood transfusion is indicated if the red blood cell count is below one million per cubic millimetre. The subsequent dosage of hog stomach should be sufficient to maintain the red cell count

at five million per cubic millimetre. A quarterly blood count is advisable for purposes of control.

NEUROLOGY.

Affective Psychoses in Children.

J. KASANIN (*American Journal of Psychiatry*, May, 1931) points out that affective psychoses in childhood are extremely uncommon. In proof of this he states that though the Boston Psychopathic Hospital, whence these observations come, admitted 1,900 new patients yearly, only two or three were found during each year to be suffering from this disorder. Ten such children, six boys and four girls, under the age of sixteen years, were studied. It was impossible to divide the material into homogeneous groups. In two cases kinetic features (extreme restlessness, over-activity, constitutional excitedness) stood out most prominently and had begun in early infancy. In the other eight cases the mood disturbances, with well defined elation or depression, quasi-manic or melancholic, were the essential constituents of the picture. One half of the children showed definite physical anomalies (spinal curvature, strabismus, disturbed posture). The immediate precipitating factors in the psychoses were usually quite trivial. The most important single factor in the ætiology of the breakdowns seemed to be the constitution of the child. The prognosis was always serious.

The Vibration Sense in Parkinsonism.

C. WORSTER DROUGHT AND T. R. HILL (*Journal of Neurology and Psychopathology*, April, 1931) have made observations in twenty-five cases of post-encephalitic Parkinsonism. In all of these there was definite impairment of vibration sense and deep pressure pain when investigated by delicate quantitative methods, namely, with the tuning fork apparatus described by Symns (*The Lancet*, Volume I, 1918,) for testing the sense of vibration, and the algometer of Head for deep pressure pain. Discussing the nature of vibration sense, the writers agree with Head and Holmes in thinking there is a close relation between this and the sense of passive movement and posture, and they emphasize the conclusion that the protopathic appreciation of vibration sense and deep pressure pain occurs in the thalamus. They also advocate the probability that abnormalities of proprioception in Parkinsonism are due to some degree of thalamic depression by encephalitic infection.

Degeneration in the Spinal Cord.

EDWARD MELLANBY (*Brain*, September, 1931) has carried out experimental investigations on degeneration of the spinal cord. His investigations were started when he was studying the ætiology of rickets in puppies. He concludes that when diets containing a large amount of cereal (other than yellow maize) and deficient in vitamin *A* or carotene are eaten by young puppies, it is possible to observe degenerative changes in the spinal cord in the form of demyelination of the nerve fibres. These changes as a rule are revealed by Marchi's method of staining. The daily addition to the diet of two to five grammes of ergot under these conditions hastens and intensifies degenerative changes. Rye germ also hastens the changes, and the author found in some experiments that wheat germ has a similar but less pronounced effect. The presence in the diet of any rich source of vitamin *A* prevents or diminishes these degenerative changes, even when ergot is eaten. Spinal cord degeneration of this type does not seem to develop until the reserves of vitamin *A* in the liver are dispersed. Since these stores may be very large in well fed animals, the time of onset of the symptoms of spasticity incoordination and weakness varies greatly in different litters of animals. When ergot is used, the changes are seen usually after the animal has been taking the diet for from two to four months. Not only do vitamin *A* and carotene prevent the degenerative changes, but even in affected animals great improvement in the clinical condition follows the addition of either of these substances to the diet. The author discusses the possible bearing of these results on convulsive ergotism, pellagra, lathyrism, subacute combined degeneration in pernicious anæmia, *tabes dorsalis*, disseminated sclerosis and on the malarial treatment of cerebro-spinal syphilis.

A Bulbar Type of Poliomyelitis.

W. G. SCOTT BROWN (*The Lancet*, December 12, 1931) reports an epidemic of poliomyelitis of the bulbar type. The epidemic occurred in a coeducational boarding school situated a quarter of a mile from a small country village and standing in its own grounds. Out of a total of 11 teachers, 56 pupils and 8 on the domestic staff, 15 were ill during a period of two months. All the infections were either of the bulbar or the abortive type. There was no spinal case in the epidemic. The clinical features of the prodromal or abortive infections were not such that a sporadic case could be diagnosed. The most typical features were vomiting or nausea at the commencement of a feverish attack with a slight cough. Pharyngitis was present in every instance. The child did not feel particularly ill and appeared to have recovered on the third day. Bulbar involvement developed on the third or fourth day of the prodromal period. There was an increased cough and the child now looked ill or perhaps frightened. A cranial nerve palsy developed between the third and ninth day of the illness, though most commonly on the fourth or fifth day. The diagnosis was confirmed experimentally by the neutralization test in monkeys. Control tests were made with saline solution and serum. The author found experimentally that the children who suffered from the abortive type of infection and several of the contacts developed immunity. He found evidence in favour of a spread from patient to patient, and the incubation period was seven to nine days when a contact infection could be assumed to have occurred.

Disseminated Sclerosis.

J. A. BRAXTON HICKS AND F. D. M. HOCKING (*The Lancet*, August 22, 1931) have investigated the spherule described by Chevassut as the specific virus in disseminated sclerosis. They have examined specimens of cerebro-spinal fluid from patients with this disease. They also examined specimens of fluid from patients suffering from other conditions. The spherules were found in each of five specimens from disseminated sclerosis and also in such conditions as cerebral thrombosis, cerebral tumour, cerebral abscess, general paralysis of the insane, *tabes dorsalis*, spastic paraplegia, *paralysis agitans*, epilepsy *et cetera*. No spherules were found in two of the total of twenty-seven specimens. Disseminated sclerosis accounted for five, and twenty conditions other than disseminated sclerosis for the remainder. The authors point out that their findings agree with those of Lépine, Mollaret and Tronconi. They do not consider the spherule to be a virus, but a flocculation or precipitation phenomenon produced by the interaction of the spinal fluid and blood serum. They have not found it possible to study a sufficient number of specimens of normal fluid in order to determine whether this phenomenon indicates an abnormal fluid or whether it occurs with any fluid.

Tabes Dorsalis in Congenital Syphilis.

NONNE (*Münchener Medizinische Wochenschrift*, April 10, 1931) describes two cases of *tabes dorsalis* occurring in congenital syphilitics. The first patient was under observation for many years and during all this time the Wassermann test, applied to both blood and cerebro-spinal fluid, consistently failed to give a reaction. *Post mortem* examination revealed typical tabetic changes, and the author states that this is only the second time in the literature in which the clinical diagnosis of tabes on a basis of congenital syphilis has been confirmed by *post mortem* examination. In the second case the patient's maternal grandfather had had a primary digital infection, the patient's mother had been a congenital syphilitic, the patient's father had at all times been free of infection, and the patient himself had developed signs of early tabes at the age of puberty. This is said to be the only reported case of tabes on a basis of congenital syphilis occurring in the third generation. In both cases the tabes was of the type characteristic of congenital syphilis; early optic atrophy and the usual sensory and reflex changes were present, but there were few or no lightning pains, no crises, little or no ataxia and no joint affections.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE VICTORIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Women's Hospital, Melbourne, on July 15, 1931. The meeting took the form of a series of demonstrations by the members of the honorary staff.

Contractions of the Pelvis of the Kidney.

DR. J. LEON JONA showed a cinematograph film depicting the contractions of the kidney pelvis. The film was constructed from a series of pictures taken of the kidney during a pyeloscopic examination. X ray films were also demonstrated, illustrating pathological anatomy and pathological physiology of the kidney pelvis, and also pictures obtainable by retrograde pyelography with "Abrodil".

Chronic Cervicitis.

DR. EDWARD WHITE showed several women who had been treated by surgical diathermy for chronic cervicitis.

The first patient, aged fifty years, complained of menorrhagia and a vaginal discharge. There had been a large erosion of the cervix, which had been treated ten days previously by electrical coagulation. At the time of the meeting there was a raw area where the slough had separated. The next patient was a young married woman who had complained of a yellowish discharge. There had been a severe erosion of the cervix, which bled very easily. This had been treated by electrical coagulation; at the time of the meeting, five weeks later, the wound was healing satisfactorily. The third patient was a young married woman who had complained of sterility and a vaginal discharge. The endocervix had been treated by superficial electrical coagulation seven weeks before the time of the meeting. Results were satisfactory.

Dr. White then demonstrated three specimens of uteri which had been totally removed by the Worrall method from women in mature life, complaining of menorrhagia, leucorrhœa and erosion of the cervix.

Ovarian Cyst.

Dr. White's next patient was a woman, aged forty-two years, who had complained of amenorrhœa of two months' duration. Abdominal examination revealed a smooth tumour, the uppermost limit of which was midway between the pubic symphisis and the umbilicus. The tumour was a multilocular ovarian cyst. The diagnosis from pregnancy had been discussed and had been confirmed later at operation.

Puerperal Sepsis.

Dr. White then showed the ward charts of several cases of acute sepsis. The first was one of induced septic incomplete abortion; on account of hæmorrhage, the uterus had to be emptied, mainly by the finger and partly by careful and gentle curettage. Septicæmia had resulted and *Staphylococcus aureus* had been cultured from the blood. At intervals of a week three transfusions of blood had been given, consisting of 625 cubic centimetres (twenty-two fluid ounces), 398 cubic centimetres (fourteen fluid ounces) and 568 cubic centimetres (twenty fluid ounces). At one stage the patient had appeared to be recovering, but she had developed a massive sceptic infarct of the right lung and died.

The next chart shown was that of a patient who had suffered from septicæmia following abortion. Hæmolytic streptococci had been cultured from the blood. A transfusion of 426 cubic centimetres (fifteen fluid ounces) of whole blood had been effected with a satisfactory result.

The third case was one of puerperal septicæmia following parturition and the removal piecemeal of an adherent placenta. A slowly growing, non-hæmolytic anaerobic streptococcus had been cultured from the blood. A transfusion of 321 cubic centimetres (eleven fluid ounces) of citrated blood had been carried out; two days later 568 cubic centimetres (twenty ounces) had been given. The temperature had fallen soon afterwards and the patient had recovered.

Dr. White said that these cases were demonstrated in order to show the value of blood transfusions in acute sepsis.

Pelvic Infection.

DR. ARTHUR SHERWIN showed two patients who had been treated for pelvic infection by means of an extra-peritoneal operation through an incision above Poupart's ligament. The first patient was a *secundipara* who had passed through a normal confinement on May 22, 1931. Four days later her pulse rate had risen to 120 per minute and her temperature to 40° C. (104° F.). During the next fortnight the increase in the pulse rate and the elevation of the temperature had continued, and there had been occasional slight rigors. On June 9, vaginal examination had revealed a tender mass in the left broad ligament. The patient had been admitted to hospital on June 10, 1931, and, as the mass had not diminished and the fever and the increase in the pulse rate had persisted, operation had been performed four days later. An incision had been made parallel to and above Poupart's ligament on the left side; the peritoneum had been pushed upwards, and a drain had been inserted into an abscess in the broad ligament. The pulse rate had decreased and the fever had subsided after operation, and it had been possible to discharge the patient on July 4, 1931, after a lapse of three weeks.

Dr. Sherwin's second patient was a single woman, aged twenty-one years, who had been admitted to hospital on April 11, 1931, complaining of shivering attacks and pain in the right iliac fossa, following incomplete abortion. The uterus had been curetted on April 12, when fragments of placental tissue had been removed. After operation the temperature had risen, the pulse rate had increased, and the patient had appeared very ill. On May 19 a fullness had been noted in each iliac fossa, extending upwards from each lateral fornix. Extraperitoneal drainage carried out on June 1, 1931, had been followed by gradual subsidence of all symptoms.

Dr. Sherwin remarked that pelvic inflammation following parturition or abortion was due to infection of the cellular tissue of the broad ligament as against the more common tubal inflammations. As in the majority of instances the infecting organism was the streptococcus, it was of the utmost importance to prevent infection of the peritoneum. An abscess of the broad ligament that could be reached only with difficulty by means of posterior colpotomy, could be dealt with most satisfactorily by means of an extraperitoneal approach through a gridiron incision just above Poupart's ligament; it was out of the question to perform abdominal section.

Pseudo-Myxoma of the Peritoneum.

Dr. Sherwin's next patient was a woman, aged sixty-two years, who had been operated on for removal of a fibroid uterus on October 29, 1928; at the same time a mucocele of the appendix had been removed. She had been readmitted to hospital on January 12, 1931, suffering from pronounced abdominal distension. At operation a small mid-line incision had been made; a large quantity of gelatinous material and nodules had been found covering the abdominal viscera. A considerable quantity of this material, together with some free fluid, had been evacuated and the patient had been discharged relieved. At the time of the meeting there were some wasting and general weakness, and slight abdominal distension. Irregular swellings could be felt in the hepatic and splenic regions.

Carcinoma of the Vulva.

Dr. Sherwin next showed a woman, aged fifty-seven years, who complained of irritation and pain in the posterior portion of the vulva, of several months' duration. There was slight ulceration extending into the vaginal mucosa; there were induration of the tissues for a short distance round both sides of the posterior part of the vulvar orifice, and some leukoplakia on the left labium towards the urethral orifice. There was no evidence of glandular involvement. Dr. Sherwin remarked that the site of the growth was unusual.

NOMINATIONS AND ELECTIONS.

THE undermentioned has been nominated for election as a member of the New South Wales Branch of the British Medical Association:

Ward, John Thomas, M.B., B.S., 1929 (Univ. Sydney), 7, Moonbie Street, Summer Hill.

The undermentioned have been elected members of the Victorian Branch of the British Medical Association:

Somerset, John Bowie, M.B., B.S., 1931 (Univ. Melbourne), 37, St. George's Road, Toorak, S.E.2.

Baylis, Edna, M.B., B.S., 1931 (Univ. Melbourne), Queen Victoria Hospital, Mint Place, Melbourne, C.1.

Charlton, Robin Brett, M.B., B.S., 1931 (Univ. Melbourne), Alfred Hospital, Prahran, S.1.

Medical Societies.

THE ALFRED HOSPITAL CLINICAL SOCIETY.

A MEETING OF THE ALFRED HOSPITAL CLINICAL SOCIETY was held at the Alfred Hospital, Melbourne, on August 19, 1931. The meeting took the form of a series of demonstrations by members of the honorary staff.

Polycythæmia.

DR. WALTER SUMMONS showed a male patient, aged forty-nine years, a labourer, who had first consulted a medical practitioner on January 22, 1931, when a typical polycythæmic hue had been observed. This had existed for four months. The red blood cell count was 6,600,000 per cubic millimetre and the leucocytic count 10,000; the proportion of hæmoglobin had been estimated at 140%. The halometer reading had been 4·6. The systolic blood pressure had been 160 and the diastolic 120 millimetres of mercury. Nothing abnormal had been revealed at general physical examination.

He had been admitted to the Alfred Hospital on February 17, 1931, complaining of loss of power in the right arm and leg. No neurological evidences of disease had been found and the condition had cleared up. The red blood cell count had increased by this time to 7,900,000 per cubic millimetre.

On March 26 he had attended the medical out-patients' department complaining of frontal pain, vertigo and general inability to work. He had been given phenylhydrazine in a dose of 0·065 gramme (one grain) a day. The dose had been steadily increased to 0·19 gramme (three grains) a day. On May 18, the erythrocytes had numbered 9,300,000, and a week later 9,700,000 per cubic millimetre, and the hæmoglobin percentage had still been 140. The dose of phenylhydrazine had been increased to 0·39 gramme (six grains) a day, and kept at that until June 18, 1931, when its administration had been stopped completely. The number of red blood cells had been estimated at 9,200,000 per cubic millimetre on June 4, and 8,500,000 a week later. After his last visit to the hospital, on June 11, he had developed phlebitis of the internal saphenous veins of both legs and had been attended to privately by a medical practitioner. On the occasion of his next visit to the hospital, the red blood cell count had been 5,000,000 and the leucocyte count 20,000 per cubic millimetre; the hæmoglobin percentage had been 95. On July 27 the figures had been 4,700,000, 19,200 and 90 respectively. On August 8, the red blood cells had numbered 5,100,000 per cubic millimetre, and the hæmoglobin percentage had been 95.

It was to be noted that the fall in the numbers of erythrocytes had not taken place until the patient had been taking 0·39 gramme (six grains) of phenylhydrazine a day for three weeks. At the same time the leucocytes had increased in number. The decrease had continued for a further three weeks. Coincidently, the hæmoglobin value had returned to under 100%. The colour index had been normal throughout.

Cervical Rib.

Dr. Summons's next patient was a man, aged fifty-seven years, who had complained of pain in the left shoulder and arm for a period of fifteen years. The pain had become more severe, and numbness of the two middle fingers had developed.

On April 2, 1931, examination revealed wasting of the left deltoid muscle, definite diminution of sensation both to pain and to light touch over the left deltoid region and extending down the external surface of the arm to the wrist, and upwards on the neck to the margin of the hair. The area of anæsthesia had corresponded to the segmental distribution of the second to the seventh cervical nerve roots. Abduction of the left arm above the horizontal level had been carried out with difficulty.

X ray examination had revealed a definite cervical rib on the left side and an immature one on the right side. He had been admitted to a surgical ward, but operation had been deferred on account of the thickness of the neck; also doubt had been expressed as to the possibility of improvement, as the higher cervical roots had been also involved. The anterior branches had been injected with alcohol, with relief from pain for only twenty-four hours.

The pain was becoming more severe and more continuous and wakened him from sleep. He was unable to work. The explanations of the increase in severity were possibly increase in calcification of the cervical rib and an increased pressure due to the shoulders becoming more stooped with increasing age.

Post-Encephalitic Parkinsonism.

Dr. Summons's next patient was a male, aged twenty years, who had suffered from general muscular jactitations over the previous three years. The mouth was drooling and open, the expression was mask-like, and there was pronounced ptosis, so that the head was usually thrown back to enable him to see. There was no history of acute illness. He had attended the Alfred Hospital as a surgical out-patient for osteomyelitis for two years from February 2, 1926, but had not been seen by a doctor for twelve months prior to examination in the medical out-patients' department, when the post-encephalitic condition had been well marked. He had been treated first with hyoscine by the mouth, with improvement; later *tinctura stramonii* had been given with the result that there was a great lessening of the muscular movements. He was receiving up to 3·5 cubic centimetres (one fluid drachm) of the tincture daily.

Dr. Summons then showed a male, aged twenty-nine years, who had been examined first on June 18, 1931. Eleven years previously he had suffered from acute "influenza", and had never been well afterwards. He had been drowsy, and made irregular movements. There had been abnormal facial contortions, especially a periodic opening of the mouth. The expression had been mask-like; there had been spasticity of the arms and legs, worse on the left side. The left thigh and leg had been wasted. There had been no hesitation in answering questions. The "mouthing" and movements were much less after two months' treatment by means of *tinctura stramonii* in a dose of 3·5 cubic centimetres (one fluid drachm) a day.

Splenomegaly.

DR. R. A. WILLIS showed three specimens of unusual forms of splenomegaly.

The first was an autopsy specimen from a female infant, aged twelve months. The child had appeared anæmic and debilitated for several weeks, and examination had disclosed an enlarged liver, a greatly enlarged spleen and moderate enlargement of the cervical and inguinal lymphatic glands. The red blood cells had numbered 2,400,000, and the white blood cells 20,000 per cubic millimetre; the hæmoglobin value had been 25%. A differential count of the white cells had revealed that the neutrophile cells were in the proportion of 50%, the lymphocytes 31%, monocytes 1·5%, myelocytes 9·5%, myeloblasts 1%. A

moderate number of normoblasts and a few megaloblasts had been present in the film.

Death had occurred a few days after admission. Autopsy had disclosed a nodular tumour totally replacing the thymus and weighing 70 grammes, many nodular deposits of similar tumour tissue in the spleen, which had weighed 308 grammes, and smaller deposits in many lymphatic glands, especially those of the neck. Histologically the growth was a thymic carcinoma, consisting of packed masses of large angular cells with many mitotic figures and whorled bodies resembling poorly-formed Hassall's corpuscles. The metastases in the spleen and lymphatic glands had the same structure; no other tissues were involved.

Dr. Willis's second specimen was an enlarged spleen from a male patient, aged thirty-three years. This man had had a primary splenomegaly for eighteen months. Splenectomy had been attempted, and abandoned because of dense perisplenic adhesions. A few hours after the operation the patient had suddenly collapsed and died. Autopsy had disclosed severe old-standing phlebitis of the splenic and portal veins, which were greatly dilated and tortuous, and the seat of old organized parietal thrombi. Death had been due to a supervening complete thrombosis of the entire portal system, apparently initiated by the slight trauma occasioned by the attempted freeing of the spleen at operation.

Dr. Willis also showed a spleen which had been removed surgically from a female, aged thirty-seven years. The patient had complained of weakness for one year. The only abnormalities revealed by clinical examination had been a mild degree of secondary anæmia and a greatly enlarged spleen. She had been discharged from hospital three weeks after successful splenectomy. The spleen weighed 1,680 grammes and was firm and uniform in consistence. Microscopically no splenic tissue whatever could be seen; it had been totally replaced by closely packed giant-cell systems identical with those of tuberculosis. Thorough search of many sections appropriately stained, however, had failed to disclose any tubercle bacilli. No spirochætes had been seen when Levaditi's method of staining had been used; there had been no reaction to the Wassermann test. The patient had given no clinical evidence of any tuberculous disease elsewhere. The ætiology of the condition was thus obscure.

Asthma.

DR. CHARLES SUTHERLAND showed three patients suffering from asthma associated with hypersensitiveness.

The first was a woman, aged thirty-six years, who had had asthma all her life. She was always worse in the early summer. Tests revealed sensitiveness to several grass pollens, to feathers and house dust. Desensitization with extracts of these had caused her attacks to disappear during the previous eighteen months. This patient's father and son were also asthmatic. The son was sensitive to house dust only, and had been completely relieved by desensitization.

The second patient was a man, aged thirty-five years, who had had asthma for fifteen years; he also was worse in the warmer weather, and tests revealed pronounced sensitiveness to several grass pollens. His asthma had been greatly relieved after desensitization to the pollens concerned.

The third patient was a girl, aged twenty years. She had had chronic rhinitis for three years with no seasonal variation. Tests with over sixty forms of epithelia, dusts, pollens and foods produced no reaction; but there was a pronounced reaction to orris root, a substance commonly used in face powders. She had been advised to use only Java rice powder, and, since desensitization had started, had been very much better.

The methods of performing the "scratch" tests with pollens, dusts and epithelial extracts were demonstrated by Miss McPhee.

Carcinoma of the Breast Treated by Radium.

MR. A. J. TRINCA showed a female patient, aged forty years, who had been admitted to hospital on December 11, 1930, with carcinoma of the left breast, which she had first noticed six months before. Practically the whole of the breast had been involved in a carcinoma firmly adherent to the pectoral fascia, extensively involving the skin and producing the *peau d'orange* appearance, with threatened ulceration at one area. There had been large glands in the left axilla. On December 16, 1930, interstitial radiation with 56 milligrammes of radium had been employed. The axilla had been opened up to introduce radium into the subclavicular, subscapular and axillary regions. The tumour had softened and almost disappeared in eight weeks.

In June, 1931, there had developed a cyst in the right breast, which had been excised.

At the time of the meeting no tumour or glands were palpable; the skin had lost its *peau d'orange* appearance; there was a slightly depressed scar in the region of the threatened ulceration. There had been a progressive gain in weight after the operation.

Mr. Trinca's second patient was a woman, aged fifty-nine years, who had been admitted on September 16, 1930. Her left breast had been involved in a large carcinoma 8·75 centimetres (three and a half inches) in diameter, of a few years' duration. The growth had been firmly fixed to the deep structures and the skin had been extensively involved. Large glands had been observed in the axilla.

On September 17, 1930, 46 milligrammes of radium had been inserted into the breast and glandular areas. In March, 1931, the tumour and glands had completely disappeared. There had been a progressive gain in weight since the operation. The breast had become soft and the skin normal. No glands were palpable.

Mr. Trinca pointed out that both of these cases had been quite inoperable owing to the degree of fixation to the chest and the extensive skin involvement. One of the most remarkable features was the restoration of the skin to a normal appearance, except for scarring from the needle punctures and some pigmentation. He had developed a special technique for treatment of the axillary glands. An incision was made along the lower border of the *pectoralis major* muscle, close to its insertion, and by blunt dissection with the finger a track was made under the muscle to the clavipectoral fascia. Every care was taken not to disturb the lymphatic field, and radium needles were inserted into visible glands and carefully along the lower border of the axillary vein and in the subscapular region. There was no guess-work regarding the position of the radium, as obtained in the method of indirect application by skin puncture, and there was therefore no risk of wounding the axillary vessels and nerves.

Carcinoma of the Tongue Treated by Radium.

Mr. Trinca next showed a man, aged forty years, who had been admitted to hospital in December, 1928, suffering from an inoperable fungating carcinoma of the floor of the mouth, involving the left side of the tongue and mandible. The diagnosis had been confirmed by histological examination. The blood had not reacted to the Wassermann test.

Twelve milligrammes of radium had been inserted into the growth and left in position for five days. The involved glandular areas had been treated by deep X ray therapy. By January 31, 1929, the growth had disappeared. On May 16, 1929, the recurrence of a small tumour in the frænum had been observed. This had been treated with four milligrammes of radium over five days. There had been a further recurrence in the frænum on May 26, 1931. This had been removed by diathermy, followed by the insertion of one milligramme of radium.

At the time of the meeting there was no trace of growth, and the mobility and shape of the tongue were good.

Mr. Trinca's next patient was a male, aged thirty-nine years, who had been admitted on February 5, 1931, complaining of an ulcer of the tongue of two or three months' duration.

On the infero-lateral border of the right side of the tongue there had been an ulcer, three by two centimetres in size, surrounded by an area of leukoplakia. The ulcer had had the characters of a squamous-celled carcinoma,

although there had been no microscopical confirmation. There had been no reaction to the Wassermann test.

On February 14, 1931, five milligrammes of radium had been inserted; this had been left in position for five days. On March 6, 1931, the ulcer had disappeared. At the time of the meeting there was a leukoplakic scar in the site of the old ulcer; there was no deformity.

Mr. Trinca stated that a remarkable feature of treatment of carcinoma of the tongue by radium was the restoration of the shape and function of the tongue after the carcinoma had disappeared. It suggested that the carcinoma tissue, in its infiltration, pushed to one side and produced pressure atrophy rather than death of the normal tissues. After disappearance of the carcinoma cells, these atrophied cells grew, with the result that regeneration was almost normal.

Fracture of the Tibia.

Mr. Trinca also showed several patients who had suffered from simple fracture of the tibia and had been treated by open operation. Mr. Trinca illustrated the cases with diagrams and X ray photographs.

Naso-Pharyngeal Fibroma.

DR. BRYAN FOSTER showed a male, aged eighteen years, whom he had first examined eighteen months previously. The patient had suffered from severe headache and nasal obstruction, which had been complete on the right side and almost complete on the left. By means of posterior rhinoscopy, a large, smooth mass could be seen in the naso-pharynx. By means of digital examination behind the palate, its attachment over a wide area of the vault and posterior wall of the naso-pharynx could be defined. Three radium needles, each of two milligrammes, had been inserted *viâ* the anterior nares, and four each of one milligramme post-nasally. Two of the post-nasal needles had become dislodged after about twenty-four hours. The others had been left in for four days. During the insertion of each needle there had been free bleeding, showing the extreme vascularity of the tumour. Six weeks after the institution of treatment, the patient had been readmitted to hospital for alarming epistaxis. Treatment had been followed by great diminution in the size of the tumour and complete relief of symptoms. At the time of the meeting there was evidence of renewed activity below the basi-sphenoid. Dr. Foster had discussed with Dr. Shaw and Dr. Gutteridge the future requirements in the way of treatment. Dr. Shaw had suggested a high septum resection to expose the sphenoid, while Dr. Gutteridge had considered a palate splitting operation would enable the operator to plant the radium needles under direct vision if further treatment was decided upon. As it was known that these tumours, after several years of activity, often came to a standstill when the patient reached the age of twenty years, it seemed justifiable to withhold further treatment while the tumour remained the same size and the patient was comfortable.

Tuberculosis of the Mastoid Bone.

Dr. Foster next showed a female patient, aged fifty-five years, who had suffered from a discharging ear in childhood, but had had no ear trouble for many years. She had first come to hospital complaining of pain in the ear and bleeding from the external auditory meatus; otherwise she had been strong and healthy. Signs of old *otitis media* had been revealed at examination, but no evidence of recent active trouble. Nothing had been seen to account for bleeding from the ear. About three months later there had developed a profuse purulent discharge from the ear and a pronounced swelling over the postero-superior portion of the meatal wall. A mastoid operation had been performed, and a large sequestrum, which had included portion of the post-meatal wall, had been removed, exposing the facial nerve. The operation had been followed by facial paralysis which had persisted for several weeks. Pathological examination of the sequestrum had revealed tuberculosis. At a subsequent operation a small sequestrum had been removed from the region of the lateral sinus groove. At the time of the meeting it appeared that the disease had been arrested.

Papilloma of the Larynx.

Dr. Foster's last patient was a man, aged thirty-four years, from whom, eight years previously, a large single papilloma of the larynx had been removed. The patient had recently stated that his voice had been quite clear since operation until about three weeks previously. Examination then had revealed a small papilloma with its attachment below the left cord. Reference to old notes and chart revealed that the new papilloma had recurred at the site of the old one. There was no suggestion of malignancy.

Dermatological Cases.

DR. S. W. SHIELDS demonstrated some dermatological cases. The first was that of a woman, aged forty-five years, suffering from *cheilitis exfoliativa*—a chronic inflammatory condition of the lower lip, extending to the upper lip—which had been present for four years. The lesions had been covered with coarse crusts which from time to time tended to desquamate, leaving a tender glazed surface upon which new crusts formed. There was no evidence of any seborrhœic condition, nor was the patient of a neurotic type. *Pyorrhœa alveolaris* had been present, and since her teeth had been extracted three weeks previously the lesions had rapidly improved.

Dr. Shields also showed a boy, aged seven years, suffering from *alopecia totalis*, which had developed rather suddenly, without previous illness, two years before. He seemed quite normal mentally, and the ætiology was obscure; probably there was an endocrine disturbance. He had enlarged tonsils and adenoids, which were to be removed, and he was to have local and general ultra-violet light treatment. Glandular preparations were to be taken internally.

Dr. Shields's third patient was a boy, aged six years, suffering from a large spored ringworm that extensively involved the scalp. Microscopical examination had revealed endothrix spores. The lesions were suppurative and boggy, causing inflammatory swellings of the kerion type.

Hydronephrosis.

MR. H. C. COLVILLE showed a girl, aged eight years, who had suffered for two years with attacks of pain in the left loin, associated with fever and frequency of micturition. Her urine had constantly contained pus and bacilli during this period. Pyelography by means of ureteral catheterization and injection of sodium iodide had shown a normal renal pelvis on the right side and a gross dilatation of the left renal pelvis, suggestive of hydronephrosis. Pyelography by means of intravenous "Uroselectan" had confirmed this finding, there being no secretion by the left kidney at any stage. At operation on May 7, 1931, a huge hydronephrotic left kidney, reaching to below the iliac crest, had been removed; there had been a marked stenosis of the uretero-pelvic junction, probably of congenital origin. Since operation the child had been rapidly improving in health, and the urine had been clear. This case exemplified the importance of a routine search for anatomical abnormalities of the urinary tract in every case of persistent urinary infection in childhood.

Undescended Testis.

Mr. Colville's next patients were two boys, aged eleven years, each of whom had been operated on for undescended right testis by Torek's method. In one, the first stage of the operation had been done three months previously, and the testis was now anchored to the *fascia lata* of the thigh, with union of the integuments of the scrotum and thigh. In the other case both stages had been completed, and the testis was lying in the scrotum without any tendency to retract.

The advantages of this operation were the certainty that the testis would remain in the scrotum, and the improved development which followed the replacement of the testis.

Fracture of the Upper Limb.

Mr. Colville also showed three children on whom open operation had been carried out for fractures of the upper limb, with gross displacement of fragments. The fractures had involved the surgical neck of the humerus, the

external condyle of the humerus, and the bones of the forearm respectively. It was pointed out that open reduction of these fractures through a small incision insured perfect apposition of the fragments, which could not be obtained with certainty by any other method, and that in many cases no retentive material was necessary to maintain apposition; in others a simple silver wire suture was used to secure the fragments together.

Surgery of the Sympathetic Nervous System.

MR. HUGH C. TRUMBLE showed a number of patients on whom he had performed operations upon the sympathetic nervous system for the relief of various conditions.

He had performed division of the inferior splanchnic nerves (which he demonstrated by means of diagrams) for severe constipation associated with megacolon. In adults the results were very satisfactory, the constipation of the four patients shown being entirely relieved. A girl of nineteen years, who had been treated from infancy for Hirschsprung's disease, had responded in a most astonishing way to operative treatment, and described her condition as "bonza". Mr. Trumble had also performed his operation in certain cases of severe constipation associated with a colon of small calibre, with encouraging results; but as yet the cases were too few and the time since operation too short to permit the drawing of any definite conclusions. The operation performed was more radical than that performed by Wade and Royle, and at the same time did not destroy nerve fibres to the limbs. So far, no ill effects had been noted following operation.

Lumbar ramisection had been performed in many instances for vascular disturbances in the lower limbs. In practically all cases of cold, mottled limbs associated with severe ulcerating chilblains and intolerable irritation, relief had been rapid and complete, the cold limb being converted into a warm limb. The limbs of some of the patients shown had remained warm for years after operation. Mr. Trumble concluded that the circulation could be influenced permanently by section of the sympathetic nerves, with relief of chilblains and the irritation and ulceration associated therewith.

A man suffering from Buerger's disease, whose chief complaint was intermittent claudication, still had this trouble after lumbar ramisection. His leg, however, was warm, even after exposure, although there was no pulsation evident below the knee.

A woman with severe Raynaud's disease was shown. After bilateral lumbar ramisection, both lower limbs had become warm and practically normal in colour. No operation had as yet been undertaken for the upper limbs.

Lumbar ramisection had been performed in certain cases of poliomyelitis and tuberculosis of the hip joint, in which the circulation of the limb had been poor, and painful trophic ulceration had made life miserable for the patients. The results had been excellent, a warm limb free from discomfort resulting in most of the cases.

Mr. Trumble had operated for the relief of spastic paralysis in several cases, following Royle's technique. He was disappointed with the results.

Two patients suffering from *retinitis pigmentosa*, recently subjected to operation (resection of the upper cervical trunk and ganglion) had shown some improvement.

Fracture of the Clavicle.

Mr. Trumble also demonstrated a new apparatus for use in the treatment of fracture of the clavicle.

Myomatosis Uteri.

The various manifestations of uterine myomata, from the clinical, pathological and statistical point of view, were demonstrated by the medical officers of the gynæcological clinic under the direction of Dr. Robert Fowler.

The patients were divided into those awaiting operation and those on whom operations of various types, for example, abdominal hysterectomy, vaginal hysterectomy and myomectomy, had been performed.

The statistics of operation for uterine myoma in a number of Victorian hospitals had been collected and tabulated. The results compared favourably with the figures available from any of the large overseas clinics.

In a display of pathological specimens were shown the types and possible complications of myomata; the special instruments and technical methods for electrothermic uterine operations were also shown in a series of diagrammatic representations.

Some Dental Disorders.

MR. F. H. GAUNSON demonstrated models of the mouth of a girl, aged nine years, under the care of Dr. T. Seward, orthodontist. The first models showed protruding maxillary incisors, teeth not functioning. The second set of models three months later showed that the incisors were in normal position, increase in the size of the dental arches, with a greater palatal area, and the teeth in normal occlusion.

DR. GERSHON BENNET demonstrated a method of arresting hæmorrhage after teeth extraction by using a small block of dental impression compound. Dr. Bennet also showed a patient who had suffered from a fistula caused by an infected incisor tooth. After extraction of the tooth the condition had healed within a few days.

MR. GEORGE W. FEGENT demonstrated a method of correcting the deformity and immobilizing the fragments of a fractured mandible by means of interdental splints. Several models were shown, the first exhibiting the displaced fragments, others showing the method of replacing them in normal occlusion by the wear-facets on opposing teeth, and, finally, the splints fixed in position and fastened by wires.

MR. A. E. PRYTZ and MR. PAUL PINCUS showed several patients, typical of many seen at the dental clinic, with the object of demonstrating the possibilities of improvement in oral hygiene as a result of treatment by other than radical measures. They remarked that insufficiently careful examination often resulted in a recommendation for wholesale extraction of teeth. Many mouths could be rendered healthy by the cleaning of the teeth and could be kept healthy if the patients were instructed in regard to diet and the use of the tooth brush. Mr. Prytz and Mr. Pincus stressed the necessity for closer cooperation between physician and dentist.

Apparatus for Anæsthesia and Oxygen Therapy.

The McKesson "Nargraf" Gas Anæsthesia Apparatus.

DR. GEOFFREY KAYE demonstrated the McKesson "Nargraf" gas anæsthesia apparatus, designed for anæsthesia with nitrous oxide-oxygen or ethylene-oxygen, with the addition of ether and carbon dioxide as indicated. Dr. Kaye pointed out that anæsthetic administration was effected in the usual fashion, but the apparatus possessed various characteristic features of design, namely: (i) a single lever control of the percentage mixture of anæsthetic gases; (ii) provision for the administration of the anæsthetic gases at any desired pressure from 0 to 40 millimetres of mercury without varying the percentage composition of the anæsthetic mixture; (iii) fractional rebreathing, by means of an adjustable breathing bellows, which could be set from time to time in accordance with the varying tidal capacity of the patient's lungs. In this way, accurate determination of the volume of fresh gas obtained by the patient at each inspiration was readily possible; this volume could then be controlled according to whether it was desired to raise or to lower the carbon dioxide content of the patient's blood.

The apparatus was also equipped with a recording device whereby the data desirable to the anæsthetist were recorded upon a moving and graduated chart. A continuous automatic record could be made of the percentage anæsthetic mixture and of the tidal capacity of the lungs, also the volume of rebreathing from time to time and the regularity and completeness of respiration. Recording of gas pressure was automatic; that of systolic and diastolic blood pressure was semi-automatic. Provision was made for the insertion of data concerning pulse and respiration rates and progress notes.

A series of records was demonstrated, showing normal anæsthesia and types of anæsthetic and surgical depression.

By consultation of the continuous record the anæsthetist was warned of the approach of these complications.

The application of the apparatus to special problems of anæsthesia (as nasal and dental anæsthesia, and endotracheal anæsthesia at both high and low pressures) was also demonstrated, with the appropriate accessories for such specialized branches of technique.

Apparatus for Regional and Spinal Anæsthesia.

Dr. Kaye also displayed an assortment of American syringes and needles for use in regional and spinal anæsthesia. Such apparatus represented that ordinarily in use at the Mayo and Lahey Clinics and at New York University.

Barbiturate Sedatives.

Examples were shown of the commoner barbiturate sedatives employed in anæsthesia, namely, sodium iso-amyl-ethyl-barbiturate ("Sodium Amytal"), sodium ethyl-methyl-butyl-barbiturate ("Nembutal") and sodium secondary-butyl-bromallyl-barbiturate ("Pernocton").

The advantages of these drugs as sedatives preliminary to inhalational anæsthesia were discussed, and attention drawn to the greater risks which attended their use as independent anæsthetic agents. The oral administration of small doses preliminary to inhalational anæsthesia was favoured in preference to the convenient, but rather more depressing, intravenous injection for this purpose.

A brief series of McKesson "Nargraf" records was shown, indicating the favourable effect of the oral administration of "Sodium Amytal" and "Nembutal" prior to nitrous oxide-oxygen anæsthesia.

McKesson-Evans Oxygen Therapy Apparatus.

Dr. Kaye remarked that the McKesson-Evans oxygen therapy apparatus had for its object the attack on the cardinal problem of oxygen therapy, namely, the administration of oxygen in percentages sufficiently great to correct even an advanced degree of anoxæmia. Administration of oxygen by funnel was regarded as useless, as it enriched the atmosphere breathed by only 3%. Administration by nasal catheter gave results depending upon the size of the largest catheter which could be tolerated by the patient, and upon the rate of flow of the oxygen. In unfavourable cases it might be impossible to correct anoxæmia by such methods, whilst in favourable instances the patient would receive an atmosphere containing 45% to 70% of oxygen. Tents, though giving perhaps 70% of oxygen, were wasteful of gas and led to uncomfortable accumulation of heat, moisture and carbon dioxide.

The McKesson-Evans apapratus allowed the administration of oxygen in any desired concentration from 60% to 98%. The gas was supplied either by a face inhaler fixed by a rubber head-stall, or by a self-retaining nasal inhaler. Either pattern could be worn continuously, if necessary, for days. As in the use of the McKesson gas anæsthesia apparatus, the flow of oxygen ceased during expiration and recommenced during inspiration, whilst the pressure at which the patient received the gas could be adjusted. For delirious or refractory patients a tent was available.

It was pointed out that oxygen therapy must be continued until the patient was equally comfortable without it, and that the percentage of oxygen administered must be sufficient to correct the signs of anoxæmia, as determined by the comfort and tranquillity of the patient, the degree of cyanosis, the rate and character of the pulse, and the condition of the heart and the blood pressure. Oxygen therapy was regarded as being of primary importance in acute cardiac and respiratory disease and in all urgent states of anoxæmia. Its value in chronic cardiac and pulmonary disease seemed to lie only in the possibility of securing a higher level of effort tolerance. The value of oxygen therapy in asthma, diabetes and malignant disease was not as yet confirmed.

Cinematograph Film.

Dr. Kaye also showed a cinematograph film demonstrating the technique of intratracheal administration of ether.

Proceedings of the Australian Medical Boards.

QUEENSLAND.

THE undermentioned have been registered under the provisions of *The Medical Act of* 1925 of Queensland as duly qualified medical practitioners:

Hemsley, Roy, M.B., B.S., 1931 (Univ. Melbourne), Brisbane.

Ward, John Joseph, M.B., B.S., 1930 (Univ. Sydney), Dirranbandi.

Restoration to the Register:

Douglas, George Alexander Clarence, M.B., Ch.B., 1912 (Edinburgh), Brisbane.

Additional diploma:

Gibson, Leslie Wylie Norman, M.B., Ch.M., 1926 (Univ. Sydney), M.Ch.Orth., 1930 (Liverpool).

Obituary.

THOMAS WALKER SINCLAIR.

WE regret to announce the death of Dr. Thomas Walker Sinclair, of Melbourne, Victoria, which occurred at sea on January 30, 1932.

Correspondence.

A WARNING.

SIR: May I bring under your notice a case of a confidence trick played upon me and, I understand, upon several other suburban medical men. A man came about 10 o'clock one evening complaining of supposed severe pain and tenderness in the right side. He was advised to be under observation and to be seen at his residence the following morning. He presented an open cheque (£3 15s.), supposed to be given to him by his employer for medical expenses and wished to pay for the consultation and the visit the following morning, and asked to be obliged with the change.

Needless to say, the whole business is a hoax, but the man is very well informed and shrewd. He has red hair, about thirty-three years, and had a navy blue roughish serge suit. This man is apparently using an obsolete cheque book from the Commercial Banking Company of Sydney head office.

Yours, etc.,
"STUNG".

Sydney,
January 12, 1932.

DIATHERMY OF TONSILS.

SIR: For some years I have asked for reports of unfavourable cases. No one in "khaki or grey" has come forward. The maximum fee received has been £12 12s.

Yours, etc.,
W. KENT HUGHES.

Melbourne,
January 15, 1932.

SIR JOHN MONASH MEMORIAL.

COLONEL F. A. MAGUIRE, Deputy Director of Medical Services, Second Military District, has reported that 171 officers of the Australian Army Medical Corps have sub-

scribed a sum of £25 12s. towards the New South Wales memorial. This has not been sufficient to cover the cost. It is thought that many have inadvertently overlooked forwarding a subscription. The amount contributed has been three shillings for each person. Subscriptions may still be sent to Colonel Maguire at the Victoria Barracks, Sydney.

LECTURES BY MR. C. H. FAGGE, F.R.C.S.

ARRANGEMENTS have been made with the Royal Australasian College of Surgeons for Mr. C. H. Fagge, F.R.C.S., Senior Vice-President of the Royal College of Surgeons of England and Surgeon to Guy's Hospital, London, to lecture in Sydney during his visit to Australia.

The subject of his three lectures will be "Abdominal Emergencies".

The lectures will be given at 8.15 p.m. at the British Medical Association House, 135, Macquarie Street, Sydney, as follows:

Monday, February 22: "Appendicitis."

Wednesday, February 24: "Gynæcological Emergencies in General Surgery."

Friday, February 26: "Intestinal Obstruction."

Application to attend the lectures should be made immediately to Dr. J. G. Hunter, Medical Secretary, New South Wales Branch of the British Medical Association, British Medical Association House, 135, Macquarie Street, Sydney. The fee for each lecture is 10s. 6d. (for resident medical officers, 5s.).

NOTICE.

IT has been proposed to hold a reunion of the Senior Year of Medicine of 1924 of the University of Sydney, on the evening of March 21, at the University Union. The function is to take the form of a dinner. The committee has attempted to circularize all the men and women of the year, that is, people who graduated in 1925, but it is realized that some may have been overlooked owing to change of address. In addition, it is hoped that many who started with the year in 1920 and who gave up medicine or who joined other years, may attend the function to renew old associations. Those desirous of doing so are requested to communicate with Dr. Keith Kirkland, at 135, Macquarie Street, as soon as possible.

Diary for the Month.

FEB. 16.—New South Wales Branch: Executive and Finance Committee.
FEB. 23.—New South Wales Branch: Medical Politics Committee.
FEB. 24.—Victorian Branch: Council.

Medical Appointments.

Dr. I. O. Thorburn (B.M.A.) has been appointed Registrar to the Perth Hospital, Western Australia.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes*, sought, etc., see "Advertiser," page xiv.

HOBART PUBLIC HOSPITAL, TASMANIA: Resident Medical Officers.

ROYAL SOCIETY OF MEDICINE, LONDON, ENGLAND: William Gibson Research Scholarship for Medical Women.

THE RACHEL FORSTER HOSPITAL FOR WOMEN AND CHILDREN, SYDNEY, NEW SOUTH WALES: Honorary Assistant Surgeon.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 135, Macquarie Street, Sydney.	Australian Natives' Association. Ashfield and District United Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham United Friendly Societies' Dispensary. Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney. North Sydney Friendly Societies' Dispensary Limited. People's Prudential Assurance Company Limited. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association, Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Brisbane Associated Friendly Societies' Medical Institute. Mount Isa Mines. Toowoomba Associated Friendly Societies' Medical Institute. Chillagoe Hospital. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL are advised, in their own interests, to submit a copy of their agreement to the Council before signing.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Lodge Appointments in South Australia. All Contract Practice Appointments in South Australia.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (Wellington Division): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

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